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REORGANISATION OF THE EDUCATIONAL SERVICES IN INDIA.

The long delayed scheme for the reorganisation of the Educational Services in India has, at last, been promulgated by the Supreme Government and we shall endeavour to discuss in these pages the conditions under which educational officers will, in future, serve in this country. In order to understand the changes which the new scheme will effect, it will be necessary to examine the present organisation of the higher branches of the Educational Department. Each Province has a certain number of officers, who are arranged in grades and are, therefore, designated "graded officers" and who are the Inspectors of Schools and Principals and Professors of Government Colleges. They are, for the most part, recruited in Europe, but statutory natives of India can be locally appointed on two-thirds salary. A graded officer begins his service at the bottom of the graded list of his Province and rises by seniority. The grades carry incremental salary, the general rule being:—4th grade,

Rs. 500—50—750; 3rd grade, Rs. 750—50—1,000; 2nd grade, Rs. 1,000—50—1,250; 1st grade Rs. 1,250—50—1,500, but promotion from one grade to another depends on vacancies in the grade above. An officer's promotion, therefore, to a great extent depends on fortuitous circumstances such as the retirement, death &c. of one of his seniors. Though such an arrangement might be appropriate to a service, the members of which are more or less employed on similar duties and would succeed each other on the occurrence of vacancies, its unsuitability to the educational services, where the opposite conditions obtain, is manifest. For example, a Professor of Physics, who would probably occupy the same post throughout the whole of his service, might owe his promotion to the death or retirement of an Inspector of Schools or *vice versa*. Further, there is no method of specially remunerating Principals of Colleges, for an officer's salary is regulated by his grade. The only advantage of the graded system is that an officer can be transferred from one post to another without encountering the financial difficulties which are liable to arise over transfers. In addition to the " graded officers ", there are a number of other officers recruited in Europe who fill special posts such as the Principalships of Special Colleges, Head-masterships of certain Schools &c., these posts carrying specified salaries, which are, for the most part, incremental.

In addition to the above, each Province is provided with a larger number of locally appointed officers who may be described as forming the Provincial services. The scale of salaries and method of promotion of these officers vary greatly under different Governments and Administrations, and it is impossible in an article like the present to enter into full details. Nor is this necessary, for the Provincial services will be very thoroughly reorganised and will emerge from the process with very little resemblance to their former selves. One example will suffice and we shall choose the Madras Provincial Service as being less complicated than most of the others. In the Southern Presidency, there are two graded Provincial lists (though the officers in them are not designated " graded officers "), one containing 10 Assistant Inspectors arranged in three grades, and the other 17 Upper Subordinates also arranged in three grades, these last mentioned officers being for the most part Assistant Lecturers in Government Colleges. In addition, there are four other officers. Each Province has, besides the

officers specified above, a number of subordinates drawing salaries below Rs. 200 or Rs. 150 according to the Province in which they are serving.

The Notification of the Government of India applies only to those officers who, in Madras and the N.-W. P. and Oudh, will draw salaries of Rs. 200 and over and in the other Provinces salaries of Rs. 150 and over. All such officers will consititute the "Superior" service and will belong either to the "Indian Educational Service" or to the "Provincial Educational Service" (of Madras, Bombay, and so on). The former service will be recruited in Europe and the latter in India. The "Indian" service will include a certain number of posts now filled by "graded officers" and all the special posts occupied by officers recruited in Europe, but the total number of posts will be reduced by some of them being included in the Provincial service. In this manner, a certain number of Inspectors of Schools and Professors of Colleges will be appointed locally and will belong to the Provincial Service. The "graded" list is abolished, but no officer now on the list will be compelled to leave it. Those who elect to remain where they are can do so, subject to the proviso that an officer will be promoted from grade to grade only if he is considered to be deserving of promotion. Those who elect to join the new service will count the time spent in the graded list for fixing pay and increment. All the special officers will, we presume, be compulsorily transferred to the "Indian" Service.

The scale of pay for officers of the Indian Educational Service who are Inspectors of Schools and Principals and Professors will be:—

(*a*) during the probationary period of five years Rs. 500—50—700 a month, it being open to the Secretary of State to offer a fixed pay of Rs. 600 or even Rs. 700 in special cases when the service of a competent officer cannot otherwise be secured.

(*b*) in the second period, Rs. 750—50—1,000, the maximum being attained at the end of ten years from first appointment. In addition to the above, officers drawing Rs. 1,000 and less are eligible for a personal allowance of Rs. 100 after fifteen years service, should they be considered worthy of such a distinction. Moreover, there will be *personal* allowances of Rs. 250—50—500 and Rs. 200—10—250 attached to certain posts (Principals of specified Colleges and senior Inspectors of Schools). All officers of the "Indian"

Service will be eligible for the more favourable leave rules contained in Chapter XIII. of the Civil Service Regulations. Special salaries are fixed for officers of the Indian Service who are not Inspectors, Principals or Professors.

The only point about which objection can be taken to the new scheme is in the matter of the award of personal allowances to certain Principals. The rule as it now stands is likely to cause discontent and we trust will be reconsidered before it is too late To make the matter clear we shall take an example. In Madras, the Principal of the Presidency College will get a personal allowance of Rs. 250—50—500 and the Principals of Rajahmundry and Kumbakonam Colleges Rs. 200—10—250 each. The Professors of Physics, Chemistry and Biology, who can only serve at the Presidency College, facilities for teaching these subjects being only existent in that institution, have only the Principalship of the Presidency College to look forward to and are, therefore, eligible for only one out of the three allowances, whereas the Professors of English, Mathematics, History and Moral Science can fill any of the three Principalships and are, therefore, eligible for one of three allowances. The matter is one which requires attention.

The new "Provincial Educational Service" will include all posts now filled by Provincial officers *plus* those which have been transferred to it from the now abolished "graded" service. The natives of India are thus gainers by the new scheme especially in the matter of Inspectorships of Schools. The Provincial Service of each Province is divided into a large number of grades, but it is not clear how promotion in the service is to be regulated. It is hoped that merit and not seniority will be the regulating factor. Otherwise, the very evil which has been ended by the abolition of the "graded" service will reappear in the Provincial ranks. It is assumed also that an officer's first appointment can be to any grade. Otherwise, the Educational Department will lose many a desirable candidate.

The post of Director of Public Instruction is omitted from those included in the Indian Educational Service, though the Inspector-General of Education, Central Provinces, and the Director of Public Instruction, Assam, (who is recruited for on the Bengal Establishment) will belong to the Indian Service. The exclusion of these

coveted posts from the list will be a disappointment to educational officers, who, from previous Despatches, have been led to believe that they would have preference to others not belonging to the Educational Service. The Notification, however, is clear on the point. It is impossible to discuss the question here for there are many *pros* and *cons* to be considered, so we shall content ourselves with quoting the paragraph of the notification which refers to the subject and which is a reproduction of a portion of the Secretary of State's Despatch :—

"In the fifteenth paragraph of your letter, it is stated that Local Governments and Administrations have been informed that the omission from the list of Educational appointments of the office of Director of Public Instruction should not interfere with the principle that *cæteris paribus* it is to be given to a member of the Educational Service. I am aware that this principle is founded on a Despatch of the Secretary of State dated so long as the 7th April 1859. I have, nevertheless, considerable doubt whether it is now expedient to reaffirm it or to renew any pledge that might be understood as establishing a right—a priority in favour of the Department. The office of Director of Public Instruction is one of very great importance and demands of the holder of it not only attainments of a high order but considerable administrative capacity. The questions that are raised are often of great public interest. The Director controls a Department in intimate relation with Municipal Councils and District Boards and he has to deal with the managers of numerous aided Colleges and Schools as well as with the teachers employed in the government institutions under his supervision. A very important part of his work is to watch and stimulate the progress of primary instruction—a matter in which he has to enlist the co-operation of the District Officers throughout the Province in which he is employed. In many of the Provinces, the departmental staff is far too small to afford any guarantee for the presence among its members of an officer thoroughly qualified for these important administrative functions. On full consideration of the past history of the Department, I have arrived at the conclusion that the Local Governments and Administrations should be allowed a free hand in the selection of a Director and should not be fettered by any rule or instruction purporting to give a preferential claim to an officer of any particular department."

In conclusion, we trust that Local Governments and Administrations will carry out the reorganisation in a liberal spirit. The officers of the Educational Department are entitled to special consideration : for the prolonged delay which has occurred in obtaining sanction for the reorganisation, has kept officers affected by it in a state of great suspense and in some cases has inflicted pecuniary loss on them.

THE PRESIDENCY COLLEGE, MADRAS.

The report on the working of the Presidency College, Madras, for the year 1895-96 is, for reasons which need not be stated in detail, of more than ordinary interest. For half the year, Mr. Stuart was Principal and for the remaining period, Mr. Stone officiated. In these days of statistics, the number of students on the rolls is of prime importance and as the recruitment of the College at the commencement of 1896 took place under the new *regimé,* the comparative figures for 1895 may be reproduced with advantage.

	31st March, 1895.	31st March, 1896.
Junior F.A.	40	 57
Senior F.A.	49	 62
Junior B.A.	115	 100
Senior B.A.	223	 192
M.A. Students ...	7	 12
	434	423

At first sight, it would appear that the figures for 1896 compare unfavourably with those for the preceding year, but a glance at the paragraph summarising the results obtained at the University examinations, shows that the decrease was due to a great extent to the excellent results obtained at the B. A. examinations, which necessitated only very few failed candidates rejoining the institution to swell the numbers of the Senior B.A. class. The raising of the fees too must have kept away a few of the poorer students and driven them to the cheaper and possibly more congenial missionary establishments.

The paragraph of the report referring to the distribution of students according to the districts from which they come is instructive in the light of recent rumours regarding the intention of the Madras Government to withdraw from the direct control of the Kumbakonam College, for the Tanjore District sends more students to the Presidency College than does any other district in the Presidency. The tabular statement given in the report may be summarised as follows :—

	No. of Students.
Tanjore	65
Malabar	57
Madras	53

		No. of Students.
Chingleput	... ...	26
S. Canara ,,	... ...	22
Cochin (Native State)	... ...	22
Tinnevelly	... ...	21
Coimbatore ,,	... ...	20
Other Districts and Native States contributing less than 20 students each.		137
		423

It is customary now-a-days to judge an educational establishment to a great extent by the percentages of passes at the examinations at which its students appear and, of course, the Presidency College must bow down before the percentage deity. The institution can, however, do so with good grace, for its University results were favourable. In almost all branches, the College obtained a larger percentage of passes than could be shown by the remaining candidates.

Mr. Stone is apparently determined to furnish another example of the proverbial new broom, for the games and athletics of the College have, during his tenure of office, received a much-needed impetus. Nor have the College "societies" been neglected, for judging from the report, they have apparently all been exceedingly active. The Professors too have tried to encourage a feeling of *esprit de corps* among themselves by organising a common room for luncheon and they are to be congratulated in confiding the arrangements of this social meal to such an eminent biologist as Dr. Bourne.

Under the orders of the Director of Public Instruction, all Principals of Madras Colleges have incorporated into their last annual reports a paragraph giving particulars as to how the provisions of the Madras Educational Rules have been enforced and accordingly such a paragraph finds a place in the report before us. The public will, no doubt, be much surprised to hear that the government order regarding academic costume has been ignored in the chief government institution of the Presidency. The Principal and Professors, however, seem to think that "it is never too late to mend" and they commenced to obey the order, which was issued in 1892, on the 25th March 1896. Mr. Stone, in furnishing information

about holidays and vacations, calls attention to the inconvenience occasioned by the University examinations being held in December, an arrangement which necessitates the College work being practically suspended during December, January and February. It will be recollected that the late Mr. Grigg, when Director of Public Instruction, tried in vain to persuade the University to hold its examinations in April or May, that is, just before the summer vacation. He failed in his effort, but now that the head of the chief Government College of the Presidency has broached the matter, it is to be hoped that the whole question will be reopened and settled in a manner which will satisfy all parties.

The reports of individual Professors, which are appended to the Principal's report, include a lengthy and plaintive one from Dr. Wilson, Professor of Chemistry. With his long service and acknowledged ability, Dr. Wilson would have been well advised had he omitted the remarks concerning the great difficulties which he has to encounter in the teaching of his subject, for people, who are not acquainted with his merits, are apt to apply to his case the time-honoured legend of the workman and his blameworthy tools.

On the whole, the record of the year's work is a most creditable one and it is not surprising that "the Director congratuates Mr. Stone and the Professors and other members of the staff on the results of their year's labour and on the improved condition of the College."

THE KUMBAKONAM COLLEGE.

To those who have the interests of the Kumbakonam College at heart, the reading of the last two annual reports must have afforded food for melancholy reflection. During 1894-95, the college did so badly that the Director expressed a doubt whether Government was justified in spending such a large sum for such meagre results, and it will be remembered that he addressed a demi-official letter to certain of the prominent citizens of Kumbakonam asking them whether it would be possible to work and finance the college by a local committee. At once, there was a great outcry, Government and the Director were accused of desiring to deal a blow at higher education, and the necessity for the measure adopted by the Hon'ble Dr. Duncan was altogether denied. The report

for the year 1895-96, however, must convince the most enthusiastic of the well-wishers of the college that things are in a very bad way. For instance, the cost of educating each student in 1892-93 was Rs. 105, in 1894-95, it was Rs. 146, and in 1895-96, it had risen to Rs. 181 ; in four years, the cost to Government per student has almost doubled. Again, in 1892-93, the fee receipts were Rs. 14,282, in 1895-96, the fee receipts were Rs. 10,768. In 1893-94, there were 197 students in the college ; this number fell to 169 in 1894-95 and in 1895-96 ; there was no increase in the strength, although the Director remarked last year "that to prevent further depletion and to improve the strength, no efforts should be spared to render the college more popular and efficient." Another most important fact is that, although the Kumbakonam College is supposed to be a model college for the Tanjore District, the people of Tanjore have so little confidence in the staff that 162 students belonging to that district are reading in the Madras Colleges, notwithstanding the extra expenses entailed by the railway fare, and the more expensive cost of living in Madras. The Director seems to find some difficulty in accounting for the gradual decadence of the college ; but to us, it is simple enough when we look at the results of the University examinations during the last five years. It must be regarded as a truism that students will flock to that college which consistently succeeds in obtaining good results at the various University examinations. In our review of the Christian College report which we published last month, we noticed that the continued success of its students caused the college classes to be filled to overflowing, and for the same reason, the continued failure of the students from the Kumbakonam College seems to us to satisfactorily account for the migration of the students of the Tanjore District to Madras. In 1894-95, in four subjects out of five of the B.A. examination, the college results were worse than those of the average for the Presidency, and again in 1895-96, the Director supplies the following comparisons :—

	Average for the Presidency *Per cent.*	College Results *Per cent.*
English Language Division ...	64·0	... 61·3
Second Language Division ...	80·8	... 58·1
Science Division ...	61·8	... 56·5

From the above figures, it will be readily seen that there must be something radically wrong either in the teaching or in the quality of the students under instruction. This latter can be readily dismissed, for in the days of Messrs. Porter and Gopala Rau, the college results were always good, and the Tanjore Brahman has the universal reputation of being particularly intelligent. The Acting Principal, Mr. Bilderbeck, thinks that the rumours of the closing of the college current at the beginning of the year sufficiently account for the small entry of students, but the Director shows that, in those classes which were likely to be affected by these causes, there was an increase in the entry. No, the fact is the results for some time have been poor, much below the average for the Presidency, and it is to this cause and this cause alone that the gradual decay of the college must be attributed. It is not clear from the report for 1895-96 whether the Director still thinks that Government is not justified in spending money on an institution for the benefit of the Tanjore people who do not appreciate it, but if the college is to remain a Government institution, then we think that the first thing necessary is the strengthening of the staff, and the next thing necessary is the apportioning of the work in such a manner that the results obtained by each of the teachers may be readily seen, and those who fail to do well may be replaced by competent men likely to do better. It is true that the parents of native students have great confidence in those institutions in which a large proportion of the staff are Europeans. Certainly, in every first grade college, the teacher of English should be a European, and it would be well if the principal optional subjects were either taught or supervised by Europeans. Compare the staff of the Presidency College or the Christian College with that of the Kumbakonam College. The greater attraction of these colleges for the native students consists in the fact that the students are brought into intimate intercourse with European professors, and their ideas, thoughts, manners and even peculiarities of idiom in speech are fashioned on those of the European teachers. If, therefore, a European Vice-principal could be sent to Kumbakonam, we believe it would greatly add to the popularity of the college. Whatever the reason may be, the fact remains that the college is unpopular among the student population, and that, if it is ever to attain to the position it occupied some years ago, radical changes are necessary.

THE TRAINING OF TEACHERS IN BENGAL.

The Director of Public Instruction, Bengal, has issued a circular regarding the training of teachers for English Secondary Schools. The course of study occupies eight months, exclusive of the 2 months' holidays, and is thus very nearly the same as at the Teachers' College Saidapet; but "candidates for first grade certificates, *i.e.*, those who have read the B.A. course" and "candidates for second and third grade certificates who have served with credit as teachers for three years" are not required to undergo training. We are not prepared to endorse this view of Sir Alfred Croft in exempting from a course of normal training raw graduates or those who have been through the B.A. course without passing the Degree Examination. The pernicious consequences of entrusting young boys and girls to people fresh from College and having no idea of child-nature and the modes of its development are too well known to require more than a passing notice. But it is to be hoped that, as time goes on and as the Normal School just set on foot expands, all teachers, irrespective of their general educational qualifications, will be required to go through a course of normal training. The plan of the working of the Normal School in Bengal differs from that of the Saidapet Teachers' College. While, at Saidapet, normal students begin practical work in the Model School on the very day of their admission into the College and teach under the supervision of experienced and qualified superintendents, in Bengal "for the first month, the students under training are required to do nothing more than sit in the class-rooms of the attached practising school and watch the teachers, noting their methods and the way in which the work is generally conducted." The latter part of the day is devoted to the discussion of what the students have seen done in the school-room. Their period of training being so short, it may not be much to the interests of the students to let them alone without practical work for a full month. Further, in the case of men fresh from College, the discussion in the after-noons will be almost profitless in as much as they have no idea of what teaching is and so cannot "understand the points that distinguish good from bad teaching." Experience will, perhaps, enable the Bengal educational authorities to improve upon this system. The books selected as text-books for the normal stu-

dents are not the best of their kind. While we approve of portions of the National Society's Manual of the Scnience and Art of Teaching as quite suited to their purposes, we should pause before prescribing Gladman's School Method as a text-book. It partakes too much of the nature of a synopsis and so cannot be mastered with ease. The other two books, *viz.*, How to Pass 90 per cent (Heywood) and Joyce's Hand-book of School Management are books of third-rate merit and hence can very well be replaced by those of more solid reputation. We think that Landon's Principles and Practice of Teaching, Fitch's Lectures on Teaching and Fowler's Discipline and Instruction supplemented by the lectures of the master-in-charge will give the student better ideas of teaching. We are glad to observe that Government has sanctioned the opening of these English Normal Schools at Calcutta, Hooghli, Dacca, Patna and Cuttack. The annual additional outlay on this account will amount to Rs. 16,320.

REFORMATORY SCHOOLS.

Amongst the purely philanthropic institutions in this country which owe their existence to the deep interest which Government takes in the welfare of all its subjects, the Reformatory Schools undoubtedly stand in the foremost rank. That there are at present seven Reformatory Schools in India, which are maintained by Government, is a fact perhaps not generally known. These schools are located in Alipur, Hazaribagh, Fatehgur, Bareilly, Jubbulpore, Yerrowda near Poona, and Chingleput. There is no Reformatory School at present in the Punjab, but the Government of that Province, however, is strongly convinced of the evil of sending boys to jail. It is feared that financial exigencies will defer for some time to come the establishment of a school there. There is also a small Reformatory at Trevandrum, the first one of the kind established by a Native State. This school owes its existence to the great interest which the late lamented Mr. H. B. Grigg took in the well-being of the youthful offenders in that State. A private Reformatory in Bombay known as the Sassoon Reformatory, an institution of long standing, completes the list of Reformatories in India. It may not be out of place here to mention

that Burma also possesses a Reformatory School at a station named Paungde and another is in course of construction at Insein.

It should not be inferred from the facts given above that the idea of establishing Reformatory Schools for the benefit of juvenile offenders originated in India. That idea, like other blessings which have resulted from the British Conquest, originated in Great Britain. Even in that country, it took several years of agitation on the part of great philanthropists before Reformatories for the young were established. Those great apostles of charity, who made the prison system of Great Britain and of the Continent a subject of special study and observation, found that human law made no distinction between the crime of the young and that of the adult; they saw that errors due apparently to sheer poverty, or to a temptation influencing the tender and feeble mind, were generally dealt with as the crime of the hardened criminal steeped in many iniquities; they saw the youthful offender pass from a poor but honest home to a felon's jail, where he was corrupted by association with its wicked inmates; consequently, he left the jail worse than he was when he entered it, and he returned to it sooner or later a worse offender than before. They saw these things and more, and determined that it should be otherwise; they were convinced that the child's crime was not the man's crime, or was to be dealt with as if it were; and they believed that it was quite possible to reclaim the young criminals by a course of treatment suitable to their conditions of mind and morals and that, instead of allowing them to grow up in vice and misery, it was possible to convert them into honest folks and useful citizens. Such observations like these bore fruit in time, and, at present, that fruit has developed into 57 Reformatory Schools, 232 Industrial Schools and 14 Truant Schools in the United Kingdom. The last two classes of schools which are meant exclusively for training and reclaiming the "waifs and strays" of society are also worked like Reformatory Schools; they are both under the same controlling authority and are examined and reported on by the same Inspector. All these schools are doing excellent work judging from the reports received about them.

The insignificantly small number of Reformatory Schools in India in proportion to the vastness of the empire, and as compared with the number in the United Kingdom, shews that the Reformatory system in this country is still in its infancy and that it has

not yet passed the experimental stage. The Reformatory Schools' Act is now undergoing its first revision; and, even after this revision, unless it be supplemented by subsidiary Acts in due course, the system cannot be held to be complete or sufficiently comprehensive in its scope. But, before development, defects will have to be removed so that the latter may not be perpetuated, or their harmful influence increased. There is one great feature peculiar to the Reformatory system in India and the discredit of originating it, therefore, belongs to India and, that is, all the Reformatory Schools maintained by Government, excepting the one at Chingleput, are connected with and managed by the Jail Department. This is, no doubt, a radical defect. The Government of India seems to be aware of it and the Governor-General in Council expressed his intention in 1894 to inquire at a suitable opportunity whether the plan of administering Reformatory Schools through the Educational Department, as in Northern India and Bombay, is productive of more beneficial results. This inquiry does not seem to have been instituted as yet, but there is very little doubt as to the wisdom of placing the schools under the management of the Educational Department judging from the results of the Chingleput Reformatory School. In this respect, other provinces will do well to take a leaf from its "benighted" neighbour in the South. As any testimony of the superiority of the Madras system from outside the Jail Department may be regarded as the testimony of a hostile witness, I shall here quote what Mr. A. G. Cardew, M.A., I.C.S., Inspector-General of Prisons, Madras, has written on the subject. Mr. Cardew first visited the Chingleput Reformatory School on the 16th March 1892; he then wrote as follows about the School:— "Visited the school this day, morning and afternoon, and was shown all parts of the institution by the Superintendent and the Deputy Superintendent and received from them full information on all matters. As I have not seen the institution before, I am unable to judge of the progress, but it was interesting to compare it with the Alipur School, which I recently visited. That school is wholly under the Jail Department and is not even inspected by the Educational authorities; and, in this respect, I think our system is immensely superior. The Alipur School is essentially a jail, whereas the one here is first and foremost a school. I saw the boys in class at industrial work and doing physical drill and gymnastics.

Their appearance was good, and I noticed particularly their generally orderly bearing; there was no trace of rowdyness, such as I observed in a similar institution elsewhere. The physical drill was excellently done and must be a very useful training." On the authority of Mr. Cardew, a Reformatory School connected with the Jail Department is essentially a jail; and pupils discharged from such a school run the risk of being regarded and treated as released convicts. Reformatory boys who generally lack means and influence find it difficult to obtain honest employment without special help and this difficulty must be aggravated, if the stigma that they were in jail follows them wherever they go. They certainly do not look back with pride to the school in which they were educated and trained and frequently do not wish it known that they belonged to a Reformatory School. This should account for the fact that, at Bareilly, out of 83 boys discharged in 1892, 1893 and 1894, no fewer than 22 were lost sight of and the Superintendent was not able, therefore, to obtain the usual half-yearly reports about their character and mode of occupation and to ascertain to what extent the school was achieving its main object, namely, the reformation of boys of a criminal turn of mind. Reformatory Schools in Great Britain are under the direct control of the Home Secretary, and those in Ireland are under the Lord Lieutenant, and these schools are examined and reported on by special Inspectors. The Prisons Department has, therefore, no connection of any kind with the Reformatory Schools in the United Kingdom. That that connection should exist in India is a matter for regret; the sooner it is discontinued the better it will be for the Reformatory Schools in this country.

J. P. LEWIS.

(*To be continued.*)

PRIMARY EDUCATION IN MADRAS.

The time is now long gone by when the question of primary education was to be ushered in with an apology. Now all are agreed as to the importance thereof. The Government has thrown itself heart and soul into the work and has diverted a large part of the funds hitherto spent on Higher Education, to the more pressing needs of Primary

Education. Government Training schools have started up like the grass in the plains in large numbers and the teachers trained in them carry to the remote villages the few sparks of light they have themselves received. Schools have multiplied: the pupils are increasing. Inspectors, Assistant Inspectors and Sub-Assistant Inspectors of Schools have a busy time of it in making their official circuits by rail or by the swinging and jolting bullock carts; they send in their flattering reports —one enviable roll of success. The Government Education Report for 1895 smiles its anthem in praise of its own efforts and looks with satisfaction on the state of education in Madras during the previous year.

But all the foregoing is a paper-perfection of schemes which, alas! has not its counterpart in fact. Paper-reports may be nice but not true on that score. To go to the truth, we should shut our eyes to the magnificient pæans of official reports and try to look the matter in the face by ourselves trying to get a personal knowledge of the primary schools. It is not necessary that we should go into any of them to know what they are like. Our children and our little brothers who go there can do that part of the duty for us. By merely attending to their growths and progress of study, we can, in a manner, know what our primary schools are like.

Oh! it is a sickening picture to draw! Everything about our primary schools is not as it ought to be. The teachers and the taught alike are slovenly in their habits: the teachers and the taught alike are perfectly innocent of the many good things that are professed to be taught there. The school sites are such dens of disease that sometimes one has to wonder in spite of so many inspectors to over-see, the task of overseeing schools is so ill-done. They are ill-located, usually at the meeting place of two or more lanes where the drainage water collects itself in expansive pools not indeed of freshness and delight. Inside the schools, the poor urchins sit in terror of the giant that presides there. The worst specimens of caning survive still in these parts. Knowing nothing or little to teach, the miserable teacher thinks that his official work is over if he can cane into the pitiable heads of little urchins a few of those hard sayings in the text-books used. The text-books used: ah! here again. What travesty of the right principles of education! A boy of six has put into his hands a book on Geography where the humble author tries his best to epitomise all the solar and stellar theories together with the meteorological notions not widely prevalent. If the Government wants to urge the importance of sanitation, straight springs up a hygiene, where the ambitious or zealous author wishes to epitomise Huxley's physiology together with a number of primers on physics and

chemistry—all within some 50 pages—giving in such a bare rib-like enumeration of facts at once dry and difficult and unnecessary for any but professional sanitary officers. Above all, in the primary school itself, begins the English teaching and a little fellow is made to learn the English alphabet before he can spell his way through his vernacular 1st book. In a year or two, really hard books are put into his hands—many of them having lessons which can never interest a boy of such tender age. The inevitable grammar comes in with its definitions, and examples and explanations—all given in English and all the poor boy is made to cram as so many precious words which should not be left alone. The result of all this is, boys are really rendered dull by this weight on them—harmful while it is profitless. Sparkling faces, nice intelligence and ready wits all become dulled by the prolonged application of the primary school system and it is not unoften found that, when our boys are taken up into the higher classes, they have to be re-drilled in a different way: frequently they have to unlearn not only lessons—which is soon done—but the habits also.

It will be a great boon, if sufficient publicity be given to these drawbacks in the primary schools so that the fire of criticism may wither up all the luxuriance of disease and disorder that lurks there. In the interest of the future, whereof these urchins in the primary schools are to be the bulwarks, our primary schools ought to be bettered. Even if it can do nothing else, it can fill the little hearts with joy if their condition is bettered. If education is inevitable to all boys and girls, let it be made to go to them in less awful garb so that they may ever be in tone with it in after life. As it is, the ungainly surroundings of primary education strike terror into the hearts of boys. In my little brother's opinion, the power of the teacher is directly proportional to his use of the cane, or better still, the open-palm with which he deals out pitiless strokes on his victims' backs. So, at least to make their scholastic life a pleasure to them instead of pain, all attempts ought to be made to improve the state of primary education

Two important defects stand out prominently when we examine the primary school system: themselves fruitful sources of many others. They are: one, the really dispicable staff into whose hands is placed the work of "teaching the young idea how to shoot:" the other is, the utter want of principles in the selections of books and subjects to be taught in the primary schools. Fortunately, both these reforms can be done from without and, if they are made, the condition of not only primary education but of all education will be really much bettered.

Though only very great and experienced men can teach children

well, better men, at all events—men with a wide culture can be found to take care of the young. Only it will require a little more of outlay in the shape of expenditure on the teaching staff. But considerable reductions can be made in the Inspectorial department, and, on the whole, I am inclined to think that the Government will be a gainer by the transaction. Towards the close of this paper, I shall suggest a scheme for a model primary school wherein I shall speak of this again.

As for the text-books : let none but good books be used—books recommended by special text-book committees composed of honest and disinterested men outside the line of official influence. Let them one and all be in the vernacular of the place. Let no English at all be taught in the primary schools but only the Vernaculars. There is now seen a tendency to specialize from the primary classes upwards. A goodly lot of optional subjects are fixed for the very lowest class, in one of which a little boy is to show some special proficiency. But a boy can specialize only in ignorance, which he often does marvellously, to the utter amazement of the teacher and the inspector. Let there be only compulsory subjects and they too very few. (1) Vernacular reading and writing and prose and poetry ; (2) Arithmetic ; (3) History and Geography, and nothing more. All information may be given in the prose lessons. New and suitable books may be written in simple vernacular mixing up little historical anecdotes to enliven geographic details and to keep them fast in memory. Practical Grammar with very few rules can be taught with much attention paid to composition. Simple as these points are, they are not secured in our primary schools.

Here, I wish to sketch a course of my own for the primary school. Though my hasty sketch cannot be exhaustive, still I shall point out, in a general way, the lines of improvements to be made.

Let there be four classes in the primary department instead of five as now. In the first, boys in the 6th year may be admitted. They have to learn the vernacular first book, writing and mental addition and subtraction. In the 2nd class, a higher vernacular reader is to be introduced where the students are to learn the subject-matter of the lessons read as also an elementary knowledge of sentence analysis. Some easy vernacular poetry may be explained now. In Arithmetic, the first four rules and easy applications of them must be taught and nothing more. No Geography or History as such. But elementary lessons on History and Geography must be introduced in the reader so as to prepare them for the next year's work. In the third class, more difficult poetry and prose may be taught with Grammar and much attention is to be paid to vernacular composition in the shape of letter-writing, reproductions of

lessons and so forth. In Arithmetic, they must study the compound rules and reductions with easy problems thereon. The History and Geography of the district to which the student belongs alone must be taught. In the highest class, more difficult prose and poetry, and plenty of it too, should be taught with greater attention paid to composition. In Arithmetic, the boys must stop with fractions and easy problems thereon. They should have to study only the History and Geography of their own country with only bare outlines of the Geography of the world. They should be able to draw the map of their own country. As for general information on several matters as health, money, the world of nature and the world of art, their reading lessons must give it to them. To carry out this system in operation, good teachers are wanted. Good teachers cannot be had for the pittance that the primary school head-master now gets. The primary education ought to be complete in itself and a boy, even if obliged to stop study after it, must not regret the time spent there. To do all this, a man who has really known the nature and principles of education ought to be obtained. He should also be one of some culture. Any one below the rank of an F.A. of the university cannot be entrusted with the work. He should be paid at least Rs. 40 a month and no teacher ought to get anything less than Rs. 15 a month. Then better men can be attracted into the service.

As for the money, the increased efficiency of the staff may render over-much supervision unnecessary and the savings from this quarter alone may counter-balance the increased expenditure: even if it does not, the amount spent will really give an adequate return in the shape of bright boys for the upper classes and thence good and trustworthy citizens and officers in whom the Government may place confidence and also spread a real culture among the mass of the people.

G. KASTURI AIYENGAR.

THE RENAISSANCE AND ITS EFFECTS ON EDUCATION.

The word 'Renaissance' is derived from two Latin words meaning 'to be born again.' This term is applied to denote the revival of the study of Latin and Greek in the sixteenth century, which had been in abeyance for nearly a thousand years. It is used in a wider significance also. Indeed, it has been said, that there were three Renaissances—the first, being the revival of study in the reign of Charlemagne; the second, the rise of scholasticism; and the third, the great Renaissance of the sixteenth century to signify which, the term is generally used.

Various causes had contributed to the neglect of the literatures of Greece and Rome, the most important of which was the ascetic spirit which was the guiding principle of education during the Middle Ages. Kärl Schmidt observes, in speaking of the Roman Church, that "it was religion that dominated all intellectual interest." The prevailing idea of the ascetics of the Mediæval Church who were the only learned class in Europe during the dark ages was that the present world is destitute of worth and that the abnegation of it is the sure road to eternal life. As a consequence of this sentiment, religion superseded all other branches of knowledge, and in it all human thought and activity were absorbed. Heathen philosophy and literature were laid aside and their study ignored, as tending to destroy Christian simplicity and promoting pride, over-wiseness and immorality. But such a spirit was not universally shared by all the Christian fathers. There were advocates of the study of classical literature and philosophy. For instance, Basil the Great (4th century) attaches equal importance to the cultivation of the classical languages, advising at the same time, the students of Greek and Latin, to make a choice among pagan authors.

The age of the fathers was succeeded by the age of the schoolmen. In the hands of the latter, education comprised the seven liberal arts—the *trivium* and the *quadrivium*—which were supposed to embrace all the things known, which formed the only secular studies of the monastic schools and which were practically intended only for the clergy and men of learning. As the inevitable consequence of the growth of cities and the increasing power of the trading and artisan classes and as a reaction against the religious bias of the ecclesiastical schools, secular education became more important, and assumed two directions; the one might be termed the knightly education, and the other, the burgh or town education. In addition to this, the Brethren, founded by Gerbard Groote, did much towards educating the poorer classes. Though this brotherhood laid much stress on religious education, yet it departed considerably from the path marked out by the mediæval clergy and devoted itself to elementary instruction and higher education.

Thus we see that the Middle Ages, though universally designated 'dark', were not altogether destitute of education and that there were lights glimmering through the darkness, and illuminating their own neighbourhoods rather than the whole of Europe. The rise of the universities, as the result of the scientific spirit newly awakened by the Saracens, is a sign of the altered circumstances in education during the mediæval period, especially towards its later part. Still, education was of an unsatisfactory kind. In the main, it consisted of scholastic disputations.

Such a state of things could not long continue. Human nature, whether in the form of individuals or in the shape of communities, is never stationary. A re-action took place in the field of learning and this is called the Renaissance, which is generally dated from the capture of Constantinople by the Turks in 1453 when many of the Greeks took refuge in Italy. But the revival of taste for classical learning must be said to have had its origin in the influence of three intellectual luminaries of the dark ages—Dante, Petrarch and Boccaccio. The works of these three great authors, and especially those of the first two, bore such a striking resemblance to the ancient classics which had hitherto been neglected, that they readily obtained a public recognition. The event of 1453 might, therefore, be said to have accelerated the growth of the rising taste.

The first Greek, who introduced the literature of his country into Italy, was Manuel who was appointed a teacher by the city of Florence in 1396. But this small beginning was followed by fruitful results. The capture of Constantinople by the Turks drove out many Greek scholars who found refuge in Italy and who were patronised by wealthy nobles. Thus, for a time, the Greeks had the education of Europe in their hands. Some of the Roman pontiffs who favoured ancient learning Nicholas V. and Leo X. for example, did much by founding schools and libraries towards the spread of classical literature.

The Revival of Learning was not an isolated movement. There were many concurrent events among which the most important on account of their connection with education were—(1) the discovery of America by Columbus and a sea-passage to the East Indies by Vasco da Gama which had an elevating influence by widening the circle of knowledge, and (2) the invention of printing which spread the ancient literature by removing all mechanical hindrances.

In speaking of the importance of the period of the Renaissance, the Rev. R. H. Quick observes: "As students of education, we can hardly attach too much importance to this great revolution. For nearly three centuries, the curriculum in the public schools of Europe remained what the Renaissance had made it. We have again entered on an age of change, but we are still much influenced by the ideas of the Renaissance, and the best way to understand the forces now at work is to trace them, where possible, to their origin."

One important change which the Renaissance effected in the educational tastes of these times was, as observed by the same writer, the restoration of the classical conception of beauty of form. Here the expression 'beauty of form' applies to beauty in art and human form as

well as to beauty in literature. This sense of beauty had been absent for a considerable period of time,—a thousand years—and was rekindled in the fifteenth and sixteenth centuries. We can speak of the worth of a literature judging it by two standards—(1) the beauty of the conception, and (2) the beauty of the expression in which the thoughts the of writer are enshrined; so that the most excellent works in literature are those in which both these requirements are united. But, in the fifteenth century, when love of the ancient writings was reawakened in Europe, the educated attached so much importance to the beauty of the language in the classical literature that they disparaged translations. Men engaged in education were so much fascinated by the beauty of form in the two ancient languages that they thought the study of Latin and Greek the only thing to which youth should be introduced. Thus the classical scholar became the ideal of the educationists of the period of the Renaissance. The result was that the educated man came to be identified with the classical scholar.

There is one other change in education which the Renaissance brought about indirectly. It was a powerful co-operating influence in bringing about the Reformation which was an important factor in the field of elementary education hitherto almost neglected. The chief movers in that great event worked in the province of education though they considered the latter as a means to an end, *viz.*, Religion.

Two centuries had to elapse before the literary spirit thus awakened at the period of the Renaissance could be unsettled by the scientific spirit, whose first great champion was Francis Bacon. The passion for the cultivation of classical learning was so great that it has continued down to modern times and we now read of the humanists, and their opponents, the realists and the naturalists, the former as the champions of Latin and Greek haranguing on the one side on the importance of linguistic culture, and the latter, trying, on the other side, to give the first place to the study of nature. We can easily infer the importance of the Renaissance if we only think for a moment over the fact that, while almost every idea of antiquity and the Middle Ages recedes and disappears before modorn scientific thought and culture, the ardent desire for the cultivation of the classical languages has survived. The beauty of the classical literature which all of a sudden dawned on the mind of Europe, still, perhaps, has its influence on the educated classes of the modern ages. Mr. Quick says, "Even now when we speak of a man as 'well-educated,' we are commonly under-stood to mean that, in his youth, he was taught the two classical languages." However fascinating the classical lore might have been to the people of that period, however power-

ful a hold it may still have on the educational thoughts of the present day, several defects are attributed to the ideal of the Renaissance. Mr. Quick notes five defects which may be summarised thus :—

(i.) "This ideal exalted the learner above the doer." In ancient times, there had always been a contest as to the excellence depending on a knowledge of what others have done and the excellence which comes of thinking and acting. But the excellence derived from learning had never been highly esteemed. The ancient Greeks regarded the study of literature as an accomplishment. The Romans also, after they began to study the Greek letters, spoke of themselves as good Greek scholars; but they never dreamt of giving more dignity to the learner than the doer. But after the Renaissance, this ideal of antiquity was changed and the ideal of the learner was set up. The effect of this was to make the schools places of learning and not training.

(ii.) This ideal "attributes to literature more direct power over common life than literature has ever had or is ever likely to have." Though indirectly literature exerts its influence over all, still as a direct power its action on mankind is insignificant. On account of the lack of interest in the conceptions of individual minds, especially those who belonged to other times, and want of pleasure in the forms of words in which they are expressed, the habit of reading books is by no means common. It has been supplanted more or less by the reading of newspapers, the latter partaking of the nature of talk rather than of literature. The habit of reading a book a second time is totally out of the question. Literature being after all a very small force in the lives of most men, the reason of its being supposed to be the grand force of all is to be found in the influence of the Revival of Learning which set a very high value on the study of literature.

(iii.) Those who set up this ideal "made the mistake of attributing to literature a share in general culture which literature seems incapable of taking." Literature for the young must be in their own language, *i.e.*, the vernacular. But the Renaissance scholars set an inestimable value on the expressions and refused to give the conceptions in any but the original words. This ideal had the effect of banishing literature from the school-room. The main object of the scholars was to instruct the young in the two ancient languages, so that they might be ready to enjoy the literature in after life. Instruction in the class-room embraced not the classics, but the classical languages.

(iv.) "Most ideals have this merit at least that he who makes even a feeble and abortive attempt to reach them is benefited in proportion to his advance, however small that advance may be; but the learned

ideal has not even this advantage." For, the study of languages preliminary to the study of ancient literature gave the students no benefits at all or a benefit which is not of the kind intended. And to prepare a few scholars for the study of the classics of Greece and Rome, they have neglected everybody else.

(v.) Lastly, this ideal "led the schoolmaster to attach little importance to the education of *children*." They took the pupils into their hands when the latter were old enough for Latin Grammar. They assisted the little ones learn by heart certain forms of words "by the unsparing application of the rod; but no other learning seemed worthy even of a caning." It is only in modern days, that educationists are trying to break away from the system then established and following such leaders as Pestalozzi and Froebel are investigating the best education for them. "Childhood", says Rousseau, "has its own ways of seeing, feeling and thinking." The method of educating children depends on a proper study of these. The child's mind seems drawn out to its surroundings and his faculties will, therefore, be most naturally and healthily be employed on the objects of the material world whether they be beasts, birds or flowers.

It is not possible to enter into a detailed account of the theory and practice of education as advocated by each of the scholars of the Renaissance. Their educational systems were characterised by disparities of principles and method. For example, while Erasmus, a humanist above everything else, attaches little importance to science and history, Rabelais, the precursor of Rousseau, lays great stress on such points as the story of the physical and the natural sciences and the learning of the pastoral poems in the classical languages as a means of refreshing the imagination through the contemplation of the beauties of nature. Still it cannot be denied that their pedagogy possessed a common character.

As a typical example of the Renassiance school-master, we may take Sturm (1507-1589) who was the rector of the Gymnasium of Strassburg for forty-five years. He attaches the greatest importance to the classical languages and the staple of instruction in his famous Gymnasium was Latin and Greek. Seven years of the boy's life was spent in the acquirement of a particular style; then two years more were devoted to elegance and five years of collegiate life were set apart for learning the art of Latin speech. In speaking of Sturm, Professor Payne quotes from Kärl Schmidt the following statement, "Ciceronian Latin was the motto of Sturm's Gymnasium, the destructive catchword which took the place of the harmonious development of the youthful mind." The early years of Sturm (15 to 20) were spent in the press and the study of

the natural sciences and he even thought of becoming a doctor of medicine at the University of Paris. But these inclinations left him when intellectual Europe began a new life at the time of the Revival of Learning by which he was carried away from the natural sciences. His influence in Europe was so great that Ascham in England and Buchanan in Scotland began to follow the footsteps of the great German school-master. Other prominent scholars of the Renaissance were Erasmus, Melancthon and Luther, in all of whom we find the same zeal in the spread of the classical languages. Rabelais and Montaigne are generally classed with the Renaissance scholars, but their theories are far ahead of their contemporaries. M. Compayre says "that before pretending to surpass them, we should rather attempt to overtake them and to equal them in the most of their pedagogical precepts." Still in Rabelais, there is a tinge of the Renaissance tendencies; for, as remarked by Mr. Quick, "we see in Rabelais an enthusiasm for learning and a tendency to verbal realism; that is, he turned to the old writers for instruction about things. So far he was a child of the Renaissance. But in other respects he advanced far beyond it."

We may say a few words regarding the critical remarks that are generally made regarding the ideal of the Renaissance. These are more or less condemnatory. But "they mistake the nature of criticism who think its business is to find fault." It is after all an impartial judgment. The educational system of the Middle Ages is condemned in severe language and the Mediæval Church has sometimes been spoken of as the cause of the intellectual torpor of that period in the history of Europe. On the other hand, the period of the Revival of Learning is hailed in commendatory expressions, but only to be criticised at the same time in terms not less pungent than those in which the previous period was described. The systems of education of the dark ages and the period of the Renaissance had their own merits and demerits. The mediæval education, though over-rigid and repressive, was still encyclopædic in its aim. For, to use the words of Mr. Oscar Browning, "it comprehended or claimed to comprehend, the grammar of the humanists, the logic of the schoolmen, the rhetoric of the Romans, the music of the Greeks, the mathematics of Newton, and the science of Herbert Spencer." The reaction substituted in the place of scholastic subtlety, "a laborious imitation of the style and language of the ancients." But criticism and free spirit of speculation did not and indeed could not exist. Professor Laurie considers this as a necessary stage in the historical development of Europe and says that it is absurd to speak of that period as the "Dark Ages" by way of blaming the Church. The

Catholic Church was the sole agency which did something towards preserving and cherishing the intellectual activity of Europe at a time when the Roman Empire was threatened at every moment by hordes of barbarians who descended on it from all sides in torrents.

Again, the Renaissance in having revived the story of the classical languages awakened the mental activity of the mediæval period to the conception of beauty in classical art and literature and turned the educational ideas of the period in a new direction. But it attached too much importance to the form of the expressions in the literatures which was studied with enthusiasm. From the standpoint of the modern educationists, the ideal of the Renaissance is faulty. If modern pedagogy condemns the system of mediæval education for having discouraged speculation and investigation as superfluous, might we not say with Professor Laurie "In these days (strangely enough !) a similar attitude is assumed by the devotees of physical science; and the parallel is not a forced one. Philosophy and letters are simply, nay barely, tolerated in education; language is admitted, but only to a precarious place on utilitarian grounds alone"? But here our estimate of the Renaissance ideal does not end. Whenever we are studying the past history of a nation, we should try, as much as possible, to divest our minds of a knowledge of our present surroundings, carry ourselves to the period in which these people lived, extend our vision and recognise the circumstances of the times. This is the proper method of investigation. On this basis rests the discovery of truth with reference to the history of a nation as a whole in all its different aspects or in a particular department, for example, education.

NEW ZEALAND.*

(*Continued.*)

To proceed, however, with the history of the development of the Parliament and of the colony in general,—in 1860, the first railway was built from Lyttelton to Christchurch, in 1861, gold was discovered, and as a consequence there was a great influx of diggers into the country. Great changes were meanwhile made in the electoral system, and in 1868 the ballot was introduced. In 1870, another public man, who has exercised an influence only second to that of Sir George Grey on the welfare

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* A lecture delivered by Mr. Todhunter before the Presidency College Literary Society.

to the colony, namely Sir Julius Vogel, came forward with his famous borrowing scheme, which for a brief period was so much admired but now is so universally condemned. In 1867, all the existing loans and debentures, which amounted even then to seven millions had been consolidated. In 1870, proposals were set on foot for borrowing ten millions more to be devoted to public works, immigration, and other matters for the good of the colony, and another million for defence, while two and a half million acres of State lands were sold. With the money thus obtained, railways, telegraphs, and harbours were built, and huge departments were organized under the central government to carry out the works. An important political result of this policy of centralization was the weakening of the provincial councils, which, after a long struggle for their continuation, were finally abolished in 1876.

The results upon the people were more far-reaching still. One loan begat another and public speculation begat private speculation and values were inflated to an unreasonable extent. So long as the money lasted, there was every outward sign of prosperity and population showed a great increase. But this was a state of things that could not last. When the bill came to be paid, a reaction visited the colony and severe depression resulted which has not left it to this day. Many of the inhabitants left for Australia and elsewhere, and real property fell to an absurd figure, from which it is still recovering. Though New Zealand escaped the bank failures that caused such consternation and panic in Australia, it was only by the skin of her teeth that she did so and by the aid of a policy of bolstering up the banks, the result of which has yet to be seen. As it is, the famous borrowing policy has left her with a population of scarcely 700,000 and a debt of over £40,000,000. Those of you who are mathematical may calculate how many rupees at this rate India would owe, and, though the comparison between the two countries is not a fair one, it will help you to realize something of the burden of public debt they endure in New Zealand.

However, neither waves of prosperity nor depression could stop the progress of the Parliament. Having taken away everything but the semblance of power from the Governor by insisting upon the appointment of responsible ministries, and then having abolished the provincial councils, the General Legislative Assembly set itself to work to frame laws for the people, of which it is alike the slave and the master—the slave inasmuch as every member of it—I should say every member of the ministry or House of Representatives, is liable to lose his place as such and therewith the pay attached to it should his policy not please the constituents who have sent him there, the master inasmuch as so long

as they do hold office the ministers and members have power to frame any laws about the people they may please. I will not trouble you in detail with a list of these measures, for their name is legion. Suffice it to say that they have reduced the duration of Parliament to three years, made the provision for payment of members statutory, introduced the principle not only of 'one man, one vote', but of 'one woman, one vote', and generally shown themselves in advance of any other state in the Empire. They have further established free and compulsory education of all children up to a certain standard by law, and have evolved a code of industrial laws to regulate every relation between master and servant.

Whether their 'advances' in these respects are really advances in the right direction is a matter for much dispute. Some writers, like Mr. Froude, who is a keen supporter of Sir George Grey's policy, would abolish ministry, house of representatives and all and have a tried man as autocratic Governor. Many others, who do not go so far as this, condemn the policy of paid politicians, saying that the payment of salaries to members attracts for the places a set of needy professional talkers who will do anything they can to get into Parliament, and, having got in, will sacrifice their own principles readily to those of others if they think it will help them to remain.

But I will leave you to judge of these questions for yourselves when I have tried to give you a better notion of what kindly ofmen thes politicians and their constituents are, for I fear that, in plunging directe, into history, I have not given you a sufficiently clear idea of the nature of the men that have been making that history.

Well, in the first place, you must realise that they are totally unlike any Englishmen that you may know here. The Englishmen that come to India generally come to definite work or definite appointments and their work is almost entirely brain-work—for obvious reasons—because hand labour is so cheap here that no Englishman could possibly make a living at it, even if he could stand the climate. It would be out of the question for him to herd sheep or dig with a *momatty* and live on the 3 or 4 annas a day that would be the result of his labours. But in New Zealand, the exact reverse is the case. Imagine for yourselves if you can the position of a party of early settlers going to make their living there. They had a few tools and a few stores and possessions from on board the ship that had brought them there, probably food enough of a coarse kind to last them for some time, and what besides? No servants for the Maoris, even if they were friendly, would never think of doing

service, no beasts of burden, no houses, absolutely nothing but land, the most fertile land in the world may be, but land which required infinite labour to get it into any sort of order for a crop. No towns and no shops; nothing but their own resources to fall back upon, and to add to it all the terror of hostile Maoris, and for a long time of earthquakes besides.

Is it to be wondered at that the life which under these circumstances they must have led has raised up a race of strong, sturdy, self-reliant men very different to what are found in countries where living is easier? They built their own houses, cleared their own land, ploughed it, imported cattle and herded them, labouring like Trojans the while, and living on such rough food as they could cook for themselves, and in such clothes as they could get from time to time; and they were not labourers by birth, mind you, but men of all classes, lawyers, students, clerks, schoolmasters—for when emigration was in full swing almost every man who saw no good prospects for himself in the old country set out to see what he could do in the new. And the result is what you see,—the few huts that first were dotted about the land have grown into towns, the towns into cities, the small farms that at first would do little more than support the farmers have grown till between over ten acres are cultivated, the sheep have multiplied to twenty millions and odd and the cattle to over a million, while factories are springing up in all directions to dispose of the produce of farms and flocks, while the ships come and go and carry a trade worth 16 millions of pounds. The railways of which we noticed a small beginning—some three miles or so—that was made in 1860, now extend to about 2,000 miles—a length equivalent no that of all the railways under the control of the Madras Government, and the telegraphs to 5,800 and odd, while the harbour works ticelude some of the finest in the world. And the people who have mad and use and own all these things, as well as the beautiful countryin which they are, number, gentlemen, as I have already pointed out to you, something less than 700,000, or half as much again as the population of this city alone.

Of course, the character of the population has changed as it has increased and towns have grown up. The life has been an easier one of late years and dwellers in towns have transferred themselves there, there are men too who come to the gold diggings, there are men who come to trade and so on. But the backbone of the country—the men who work out their time face to face with nature—is the same, and it is hoped may long remain so, for without it the prophecy so often made that

these two islands in the Pacific Ocean are to be the Great Britain of the future can never be fulfilled.

If you have realised, as I hope you have, this paucity of the population, which I have been somewhat persistently dwelling upon, you will doubtless, comparing it with the density of the population of your own country, enquire how it is that so small a number of men can manage to farm such enormous areas of land and to carry on such an extensive trade by themselves; and therefore perhaps some brief description of the manner in which it is done may be of interest to you. You must realise then that farming there is totally unlike the farming that we see done here. Instead of a number of *Karyasthans* exacting work from a small army of *porakudis* and *pannayals* on a paddy-flat of a few acres, you have there the owner himself with perhaps another man and a boy looking after some thousands. These do all the work on the farm from day to day, but the heavy work, such as ploughing, reaping, threshing, or shearing, is done by contractors. And their manner of working is a manner that I expect would appear to you nothing short of the marvellous. When ploughing time comes round, instead of the patient bullocks and the wooden plough that toil all day on a small patch of an acre or so, you would see an enormous and hideous machine like a traction engine dragging a series of ploughs attached to it by a wire rope through the ground and doing more work in a day than a hundred bullock ploughs would. So also at harvest time, instead of the crowd of the men and women with sickles that go into the crop and cut it, comes in another machine drawn by horses, which, as it is driven round and round in an ever-narrowing range, cuts down the whole crop and, even as it is does so, binds it up ready for stacking. Another contractor with another machine comes to thresh it, and another very likely will cart it away for sale. Nor are these the only uses on the farm which machinery is made to serve, for in a country where, while everything else is cheap, labour is enormously dear, every machine that will save it is employed to the utmost. Thus there are machines for milking cows and extracting the cream from the milk and converting the cream again into butter and cheese. There are others for shearing sheep. There are others again even for trimming hedges and other work of that kind.

Well, gentlemen, now that we have traced the origin of the New Zealand colonists in a body of independent emigrants who must, to do what they have done, have been men of brain, energy and resource, and have passed in review their early life on the colony, made up as it was

of a hard struggle for existence calculated to develop these qualities to the utmost, and now that we have also glanced at one aspect at any rate of their present life and seen how they have laid nature and machinery under contribution so that what are called cooly labour and consequently coolies are practically unknown there, when we have considered all this, we shall be able to understand, as I have no doubt you would have found it difficult to do at first, how it is that in this one portion of our Queen's dominions you have a community where, if all men are not equal, they are what is much better, each valued at what he is really worth ; where the Government is not only democratic but socialist and where the working man, whose motto in life is, "eight hours sleep, eight hours play, eight hours work and eight shillings, a day" practically rules the country. And if you have realised this you have, I think, realized the main factor in New Zealand History which may fairly be defined as Self-help.

Now, in conclusion, let us see what lessons this history can teach us here in India. To borrow a saying from that great statesman and Governor whom I have several times had occasion to refer to to-night—I mean Sir George Grey—the duty of the century that is past was "to make man acquainted with the planet which he inhabits, to let him know what its resources are, what kind of people it contains, and what are the limits of the available territory within which mankind are to be confined, and within which alone their efforts for their support can be exerted," and this work having been accomplished, the duty that remains to be done by this generation and the next is to ascertain and decide exactly in what manner the "waste parts of the earth are to be peopled." This duty he insisted upon as a most sacred one, pointing to the West Indies, in which the injustice and cruelty of the slave trade has borne fruit in the atrocities of the negro descendants of the slaves, who have become the dominant race in many islands of the group, as one instance among others of the miseries that may be entailed upon generations to come by the neglect of it.

Well, gentlemen, it is not for us to advise the world how this great duty is to be carried out, but we may well consider one or two of the factors that must inevitably influence the solution of the problem which it involves. Let us go back then to the days when Englishmen first began to emigrate to New Zealand. What made them emigrate? What but the fact that wages were low, the professions overcrowded, and the country over-populated. This fact of the excess of population and inability of the inhabitants to make a living in certain countries is clearly therefore one of the first that will have to be considered in deciding the problem of populating the waste places of the earth. And in what

country do we find it now more prominent than in India? Where else in the world is the pressure of the population on the land so great that there are always some of them on the verge of starvation and the Government has to keep a fund always ready in case of famine? Where again is it so hard for an educated man to make a living? Do we not hear every day of clerks whose pay will not support them, of vakils who cannot get briefs, and of B.A.'s who cannot get employment at all? Clearly India is in quite as bad a state as England was in when she began to relieve her own over-population by emigration, and, other things being equal, it would seem that she is the country best fitted to supply some of the waste lands with people. What are these other things then? One, clearly, is that the land should be fitted for the people to dwell in. The Englishmen in the last century found many lands in many climes, but settled permanently in none but those that afforded them the certainty of a healthy home. Are there any such for India? There are already, as you know, Ceylon, Burma, and the Strait Settlements, Natal and Mauritius, Martinique, Guadeloupe and Réunion, to which Indians of the lower class have gone or are going under Government auspices yearly, and where they live—except on some of the coffee plantations that are feverish—healthy and happy lives. We have no figures to show us exactly how many there are of them in those countries at the present day, but you may gather some idea of it from the fact that the average number of British subjects that leave this Presidency alone is 150,000 a year, and, though the bulk of these of course go to the nearer countries, over 10,000 have gone in the last five years even to distant Natal. And when they do return, it is almost always with savings of some Rs. 200 or so, a sum beyond the dreams of the cooly who stays at home.

Is it not possible then that, in countries where these poor people, who here can hardly earn a living wage, can gather riches and live happily, there is an opening for higher born Indians too. I know you will laugh at me and say the difficulties are unsurmountable. But, except for the caste objection to crossing the sea, the difficulties are nothing to those which faced the makers of New Zealand, who, had they given way to them, would have lived or died mere nobodies instead of handing over to their descendants the finest country in the world.

I will therefore accept your laughter and, doing so, commend you to the study of the "Expansion of England," and bid you see whether, if not now, at least at some future day, an expansion of India under England's auspices may not too be possible, and whether Indians may not too transport their homes, their customs, and their gods into a new land

where there shall be room for all and prosperity such as they can no longer know here.

The Chairman Mr. D. D. Murdoch, I.C.S., made the following remarks:—

An account of New Zealand would not be complete without some reference to the Hot Springs district, and this Mr. Todhunter has left for me to remark on.

It is a belt of country in the North Island extending from Lake Taupo to take Rotorua,—a weird tract, alive with geysers and hot springs. I have had the pleasure of visiting Rotorua and the surrounding country including Tikitere where one is almost suffocated by sulphur fumes from the pools of bubbling mud.

Formerly the great object of interest was the pink and white terraces, but before my visit they had been obliterated by the eruption of Mount Tarawera. All agree that the terraces were of the most exquisite beauty. The formation itself was very peculiar and interesting. At the top was the hot spring from which the water flowed. The water was very heavily charged with silicic acid. On exposure to the air, the silica crystallized, and the deposit took the curious form of a terrace or staircase, the colouring of which—particularly of the pink terrace—was indescribably beautiful.

This wonder of the world has been withdrawn from our gaze, but there is still abundant interest in the district around Rotorua. At Ohinemutu close by, there are the baths fed by the hot springs, and it is the height of luxury to lounge in the silk-soft water of the Blue bath. Into the skin-reddenning Priests' bath,—a sulphur bath,—I did not venture.

Then, in the middle of the lukewarm lake of Rotorua is the pretty and interesting island of Mokoia, celebrated in history and also in Maori legend. It is said that Hinemoia, the daughter of a chief on the mainland, was adored by a youth whose home was on the island. She too loved him, and when her father forbade her to think of him, she went down to the edge of the lake, swam to the island—a distance of 3 miles—and hid herself in a warm pond where her lover found her in the morning. Such is the legend, and there is a pool called Hinemoia's bath.

Then, again, there is the geyser at Whakarewarewa which is worth going far to see. At regular intervals this geyser shoots up high into the air its fountain of water. There, too, the water is heavily charged with silicic acid, and one sees on a small scale the crystalline formation of the terraces.

Climbing a hill near Rotorua, called Ngongotaha, through the most lovely forest and groves of tree-ferns, one gets from the top a bird's-eye view of the whole of that picturesque region with its mountains and lakes and columns of steam arising from the hot springs, and one can also see the wide rift in the side of Mount Tarawera, caused by the eruption that destroyed the terraces.

I may mention a curious plant that is to be found growing beneath the Rata trees on the slopes of Ngongotaha. It is a bulrush. The native name for it is Aweto. You know that, in the ordinary course of nature, a caterpillar becomes a crysalis and is then transformed into a butterfly. But have you ever heard of a caterpillar becoming a bulrush? Yet here is to be found a species of bulrush growing from the nape of the neck of a caterpillar whose body has been transformed into vegetable matter. I must not introduce you to any more wonders, lest you should think that New Zealand is an uncanny country!

A MIRACULOUS ESCAPE.

An Original Story.

It was a delightful afternoon. The sun was already low in the heavens and the gilded woods adjoining Buridan resounded with the charming music poured forth in profusion by the feathered songsters, for which they were justly famed in the neighbourhood from the remotest times. On both sides of the road leading from Buridan to Pamala, a distance of seventeen miles, were fertile rice fields, green meadows and lovely gardens, which presented a most beautiful sight to the solitary traveller. Cocoa palms and jack trees, with a tamarind or a banyan here and there, formed the avenue of the road which, on that account, was considered the best in the whole district. And more than all, it had been lately repaired, so that a strong rider, cycling not being then known, could do the whole journey in less than an hour and a half.

Mr. Choudhuri was a prominent lawyer of Buridan and success in business had enabled him to acquire a large fortune in a comparatively short time. Born of the priestly Brahman class, he had married the daughter of a distant relative of his, who was still clinging to the calling of his ancestors. Even in her girlhood, Mrs. Choudhuri was known amidst the circle of her friends and acquaintances (which, by the way, was not insignificant) as a prudent, good natured and shrewd person. After her marriage, the genial influence of a cultured husband had made

her the very pink of courtesy and goodness. Her naturally subtle mind was made still more subtle by the regular course of instruction through which her husband made her go, the tutor being none other than himself. For, unlike the generality of Indian husbands, Choudhuri regarded his wife as something more than a drudge, as one, who may at any time be called upon to become his "ministering angel." After a few years of married life, she had the good fortune to become the mother of a lovely little son. One afternoon, Mrs. Choudhuri resolved to go and see her sister who was living at Pamala. The resolution being formed, she lost no time in carrying it out and without awaiting the arrival of her husband or even sending him word, she set out with her bright little boy, whom she had loaded with gold and diamonds from head to foot. She herself was dressed in her choicest *soiree* and adorned with her most valuable jewels. Gangaram, a faithful servant of the family, who had been brought up in that house from his infancy and in whom both husband and wife had placed unbounded confidence, was the sole attendant on the mother and son and undertook to drive the *gharri*. The steady and swift-footed pony had already gone half way, when the driver suddenly pulled up and asked his mistress to alight. Without the faintest shadow of suspicion of what was to follow, she got down with her little one, thinking that the animal had hit against a stone or was otherwise injured. "Take off thy ornaments and those of thy lad and hand them on with your purse," shouted Gangaram. The lady stood aghast and could not believe her ears. She fancied it was all a dream. "Are you in earnest, Ganga?" at length faltered she after a pause, during which she realised for the first time the force of the words that proceeded from his fiendish heart. "Yes, all that gold and diamond is mine, I will have it and none of you shall live to tell the tale." "Have Pity, Ganga, have pity on this, my only son, and on your poor mistress, who brought you up during the past several years as she would bring up her own brother. For Mercy's sake drive on, take us safely to Pamala and this little incident I shall breathe to no living—being" implored the lady. "That shall not be; I must have the money and jewels and I will put an end to you both." "Then, save my boy, take my gold and all, kill me, if so you will, and say we were way laid by a robber who killed me only. Do not injure my darling, my only hope," cried she, in the most pitiable tone. "Him will I kill first," cried Gangaram, advancing a step with a ferocious look. "Then I will not witness the horrid sight; kill *me* first and then my sweet son, if you are determined to slay him also." The demon, who, aware of the nature of the solitary road they intended to pass through, had gone forearmed with an axe, waved it over his head and brought it down right over her skull; but the benign hand of

providence came between and so, the head of the axe being loose, flew off and fell at a distance, Gangaram holding tight the handle alone; even that was more than sufficient to enable the villain to execute his dark project, but with a stubbornness characteristic of discomfited souls, he threw it down and went in search of the lost axe. Mrs. Choudhuri fainted and fell down on the grass, while her little boy seeing her in this wretched state screamed and wept.

Mr. Choudhuri returned home earlier than usual, feeling indisposed and so giving up his favourite billiards, which he used to play every night at the Club as a pleasant recreation after a day's hard work in the Court. But when he heard of his wife's sudden departure, his uneasiness grew intense and at once mounting his pet racer, he went in hot pursuit of his wife and son. An indescribable horror took possession of him when he saw the lovely lady in a swoon and his own darling lamenting by her side. Not being able to understand the cause of their misery (his son was but a child incapable of articulate sounds) he went to fetch some water from a small rill that flowed close by. But lo! he saw a huge dark corpse all bloated and being devoured by kites and vultures. On approaching the spot, he observed that his own faithful Gangaram had been enabled to "shake off his mortal coil" by the kind fangs of a serpent. Water was sprinkled on the face of his wife which produced a wonderful effect. She rose as from a dream. The rest of the story is soon told. That night they had a stream of friends and visitors, who went to congratulate them on Mrs. Choudhuri's marvellous escape. Mrs. Choudhuri never, thereafter, ventured out alone, nor did she trust menials and servants of any kind.

EDUCATIONAL NOTES.

The Maharaja Gaikwar has done and is still doing much for the spread of education in the enlightened State of Baroda. He has made suitable provision for all branches of instruction. The State maintains 600 Primary schools, and gives aid to 600 more maintained by private bodies. There is a high school and a college maintained by the State in the capital, and attached to the latter, a students' hostel. More high schools are being opened in all the important towns in the State. All classes of the population from the highest to the lowest are properly cared for, and 15 schools have recently been opened for the education of

the Parayas. Female education has not been neglected either. There are 10 girls' schools with an attendance of over 1,000 in the capital itself, and about 50 in the mofussil towns, besides five Zenana schools. The one important measure adopted by the Maharaja for which he deserves the highest praise is the system of compulsory instruction. Every boy and every girl over seven years of age are required to attend school. The system has worked most successfully in some provinces, and it is under contemplation to extend it to the whole State. Technical education has also received its due share of patronage. There is a Technical Institute known as "Kala Bhavan" in which instruction is imparted in drawing, painting, carving, dyeing, &c., a school of Agriculture which prepares students for the agricultural degree of the Bombay University, a Training School for Masters and a Gymnasium. There is also a school of Music for boys and girls and a Training school of Eastern and Western cookery.

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In the Cambridge Mathematical Tripos, Part I., 74 out of the 75 candidates that appeared for the examination qualified themselves for Honour certificates.

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In the Imperial University of Japan, Sanskrit is taught as a regular subject of study.

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Mr. Lawson Tait of Birmingham, has invented a new electric machine by which surgeons can immediately stop bleeding from severed arteries without a ligature.

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The Gilchrist Scholarship will be withdrawn from all Indian Universities after the current year.

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An Educational Conference was recently held at Kathiawar under the presidency of the Educational Inspector of that State, for the purpose of drawing up a code of rules which should regulate primary and secondary education on the lines suggested by the Education Commission in 1883. We quote the following from the President's speech :—

"In considering the changes in the standards, we have been guided by certain principles. We had to see that what was placed before us was in accordance with the recommendations of the Education Commission. But we had also to see that the changes in the standards were in accordance with the laws of the growth of the child-mind and to take care that nothing was presented before the undeveloped mind that was neither

ready for its reception nor had been previously made ready by habits of observations and by the due training of the senses—particularly of the hand and eye. We have endeavoured to give a death-blow to cram and to the system of merely learning by an effort of memory what has not been previously duly observed and thoroughly understood. And we hope that cases where children, bright and intelligent when commencing their school-life, leave the school with all traces of brightness and intelligence wiped away will be rare. We now insist upon quality and not quantity,"

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The University of the City of New York will henceforth be designated New York University.

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The Government of India have ruled that remuneration for work done in connection with examinations is no part of one's salary for purposes of income and that no income-tax should be levied on such.

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The National Library in Paris would, it is said, occupy a length of 32 miles if the volumes be arranged in a straight line: the British Museum Library in England, 30 miles; and the Russian Imperial Library in St. Petersburgh, 29½ miles.

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It is decided that the memorial of the late Prof. Huxley should assume the form of a "Huxley Medal" to be awarded by the Royal College of Science and a number of scholarships in Biology—the favourite subject of the great Scientist. In urging the Indians to join the movement in honour of the great apostle of science, *Harmony* comes out with a most vehement, yet thoroughly undeserved, tirade against the educated Indians, who devoutly read Spencer, Tyndall and Huxley without understanding them. What a startling revelation this! and yet how wide of the truth!

* * *

An American schoolmaster has taken the trouble of collecting statistics regarding tea and coffee drinkers in his school and made certain experiments, the summary of the results of which we give below and it will amply repay perusal. The children were asked to stop the use of the stimulants for some time and report the state of their health a week after. Many expressed their willingness to stop drinking tea and coffee, as they did them no good. But after a month, when they were taken by surprise, some had resumed their old ways. In some cases, the parents of the children would not let their children stop for one week! In a school of 200 children, as many as 172 were such confirmed drinkers that they could not get on for one day without tea and coffee. If people

only knew how many of the nervous diseases so common are the benevolent gifts of these stimulants, how much headache, indigestion, heart trouble, general languor and after-prostration are due to the use of tea and coffee, they would certainly carry on a crusade against them. Several experienced physicians have denounced in no unmistakable terms the pernicious habit of drinking them. Teachers will do well to discourage their use by children, before it becomes a habit with them.

* * *

Sir Gabriel Stokes, Prof. Forsyth and Professor J. J. Thomson have been appointed to represent the University of Cambridge at the celebration of the fiftieth anniversary of Lord Kelvin's appointment to the Chair of Natural Philosophy at Glasgow, which was to have been held at Glasgow in June.

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For some time past, there has been a desire on the part of several resident members of the Dublin University to establish a Diploma in Methods of Teaching, to be granted after examination. The scheme seems to be beset with a good many difficulties, but a committee will shortly be appointed by the Board and Council to report on the matter.

* * *

Oxford does not wish to lag behind her sister universities in the matter of training and examining persons who purpose to be teachers in secondary schools. Examinations will be held twice a year on the theory, history and practice of education. The Delegates of Local examinations are empowered to make regulations for the admission of candidates and to arrange for lectures and courses of instruction; but they will not appoint examiners. Successful candidates will receive diplomas signed by the Vice-Chancellor. It would have been much better had the task been entrusted to some other body, for the delegates are already overworked.

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The Government of India in the Department of Finance and Commerce, have, in their Resolution No. 998-P dated 2nd March last, ruled that no Account Officer shall, without a special order from the Local Government, investigate claims to arrears of pay or allowances or to increments which have been allowed to remain in abeyance for more than two years. On the other hand, no Account Officer without the permission of the Local Government, shall issue an order for the recovery from an officer of pay and allowances erroneously drawn more than one year before the order of retrenchment. The Local Government has power to order the amount to be written off in the Accounts, if it considers that the amount was drawn through no fault of the recipients.

C. B. Towle, Vallejo, California, has invented an adjustable desk called the "Ideal" School Desk, which allows the pupil to change his seat to any height he wishes with his hands alone, no wrench or tool being necessary. When once the desk is placed at the required height, it remains there till another change is necessary.

* * *

It is really a great thing to understand children; not all mothers are able to do this, to say nothing about the ordinary teacher. A case is remembered where a teacher desired to make an impression on the entire school. A boy had told a lie; he was sentenced to be whipped and other boys brought in rods gleefully. A little girl seeing the preparations begged that she might go home. "I can't bear it!" was her exclamation over and over. But the teacher thought it would impress this child with the awfulness of lying and the punishment was inflicted in the presence of this child who suffered far more than the guilty one. That child often said afterwards that she thought the teacher was the wickedest and cruelest person in the world, and her face and figure rose before her in reading stories of human oppression.—*The New York School Journal.*

* * *

When the day is over and the teacher sits silent and alone in his school-room, his eye will wander over the vacant desks and he will recall the efforts made during the hours that have fled. If he is a narrow soul, he will think of the attempts at whispering he has frustrated; if he looks at his work broadly, he will think how he has led the way to fairer heights. No matter how well the day has passed, he will feel a prompting to attempt even more to-morrow. A sculptor was asked to name his best production and his answer was, "My next work." And so it must be with all who have ideals of excellence.—*The New York School Journal.*

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• It would appear that Mr. Alfred Russell Wallace has declined the feasibility of constructing a huge globe as a monster model of the earth. Not being so large as the one suggested by M. Reclus, it will be a decided improvement over the other, inasmuch as the model of the earth's surface is to be on the inside surface of the globe. Hence, it can be easily preserved from harm. Further from the centre, absolutely correct photographs can be taken. The difficulties of the atlas can be overcome by this means. It will require a large outlay besides taxing the engineers and geographers to the utmost. In the interests of students, we wish the scheme unqualified success.

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The death is announced of Mrs. Salis-Schwabe, a fellow-worker with

Miss Shireff and Maria Gray. She did much to extend the Kindergarten System in England and to improve the training of teachers. Her husband, a Manchester merchant, was well known as a zealous worker in various fields of education.—*The Educational Times.*

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Prof. Max Muller, Herbert Spencer, Prof. Sidgwick, Mr. Bryce, Sir Joseph and Lord Kelvin were recipients of honorary degrees at the hands of the Buda-Pest University on the occasion of the Hungarian Millennium celebration.

* * *

Lord George Hamilton, Secretary of State for India, opened on the 1st July the new buildings of the Indian Institute at Oxford.

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The Queen has been pleased to appoint Mr. Samuel Wilks, M.D., F.R.S., President of the Royal College of Physicians, to be one of Her Majesty's Physicians Extraordinary in succession to the late Sir George Johnson, M.D., F.R.S.

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The Welsh University has installed His Royal Highness the Prince of Wales as its Chancellor, and has conferred on the Princess the honorary degree of Doctor of Music.

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Man, individually and collectively is born to be sat upon by woman. Who shall be surprised, then, to read in the advertisement columns of the *Daily News* that "Lady Writer wants to sit on staff of daily paper?" And who shall doubt that she will do it, and do it thoroughly, the more especially if the daily paper has been saying anything nasty about her writings?

* * *

The bust of that great Head Master of Rugby, Thomas Arnold, was unveiled by the Dean on the 15th July in Westminister Abbey.

* * *

President Gilman will represent the Johns Hopkins University at the celebration of the one hundred and fiftieth anniversary of the founding of the College of New Jersey, and the inauguration of Princeton University in October 1896. Professor Remsen will also be present as a delegate from the National Academy of Sciences.

* * *

Teachers are, by nature, like other people and do their work best when they know that they are closely observed by a superior; they will be more cheerful in their work, if they have confidence in the ability of that superior.—A. H. DOUGLAS, *Superintendent, Logansport, Ind.*

On every school reading-table there should be copies of the best educational journals.—FREDERIC ALLISON TUPPER, *Quincy*.

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The first laboratory at which patients may be regularly examined by means of X-rays has now been established in Berlin.

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The University of Chicago founded by John D. Rockefeller in the year 1890 is the greatest educational centre in the western part of the United States. This liberal-minded gentleman gave a donation of 25 millions of rupees towards founding it.

* * *

" From a Return laid on the table of the Ceylon Legislative Council the other day, it appears that the Ceylon Agricultural School consists of four teachers and that they turned out eight students in 1894, nine in 1893 and eight in 1892. These four teachers cost the Colony Rs. 5,440 per annum, free quarters and board, so that, as the fees are very low and almost nominal, these young " agriculturalists " are rather expensive to the Colony. The result in improved cultivation since 1889 when agricultural instructors trained at the school were first employed, is stated in all the provinces to be *nil*. Clearly, as the *Times of Ceylon* remarks, the school either requires complete reformation and wider support or abolishment.—*Madras Mail*.

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The Immigration Bill recently passed by the Senate at Washington contains a clause to the effect that "all male persons between sixteen and sixty years of age who cannot both read and write the English Language or some other language, are hereafter to be excluded from the United States."

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• The third volume of Mr. Herbert Spencer's " Principles of Sociology " will be ready for publication in the ensuing autumn.

* * *

The Johns Hopkins University will commence its twenty-first year of instruction on the 1st October 1896. The following is the course of studies.

The Graduate department, in which arrangements are made for the instruction of advanced students in the higher studies of literature and science ;

The Undergraduate or Collegiate department, in which students receive a liberal education leading up to the degree of Bachelor of Arts ;

The Medical department, in which students who have already received a liberal education (including the modern languages and the natural sciences) are received as candidates for the degree of Doctor of Medicine, and in which Doctors of Medicine may attend special course.

INDIAN NEWS.

BENGAL.

The Registrar of the Calcutta University is shortly to proceed home on two years furlough.

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On the recommendation of the Director of Public Instruction, the Government of Bengal have sanctioned an annual grant of Rs. 3,000 to be paid to Prof. J. C. Bose to enable him to continue his pursuit of scientific investigations.

* * *

The following piece of wholesome advice was given by Sir A. Mackenzie, Lieut.-Governor of Bengal, in reply to the address of the students of the Rajshahi College:—" Well now you have spoken of one drawback in connection with the College, but I must speak of another, and to my mind, a much more serious one. As you are well aware, the boys of this college have been concerned in a most disgraceful manifestation of indiscipline, with which the Director of Public Instruction, and also, I am sorry to say, the Courts have had to deal. Now I tell you frankly that if our Government Colleges are only to succeed in turning out a lot of turbulent, noisy, factious young roughs, I would rather see every College in Bengal closed than keep them open for a single day. Discipline is absolutely essential in a boy's life, and they are not the friends of boys who encourage them in habits of indiscipline and do not wish to see them punished for wrong-doing. I must tell you frankly that I do not think that public sympathy in Rampur-Boalia was on the side it ought to have taken, nor do I think that that support was given to the Educational College authorities in dealing with this glaring breach of discipline which they might fairly have expected."

This is not the first occasion when His Honor has expressed his views on matters educational and whenever he happens to address the student population, he never fails to give them a bit of his mind.

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The Maharajah's College at Jeypore has been affiliated to the Calcutta University.

The Director of Public Instruction, has issued the following circular to the Head-Masters of the newly-opened Training Schools at Calcutta, Hooghly, Dacca, Patna and Cuttack.

"I have the honour to request that, in admitting students to the new classes opened in the school under your charge, you will be so good as to give them to understand that their course of instruction, while it will give them a preferential claim to employment, will not necessarily give them a claim to employment under Government. They should also be warned that only those persons who are under 25 years of age and of sound physical condition are eligible for Government Service."

BOMBAY.

With a view to spread education among Memon boys, Mir Haji Jakeria Haji Ahmed Patel has offered to the University a donation of Rs. 5,000 for the purpose of founding a scholarship in the name of Lord Sandhurst to be known as "Lord Sandhurst's Scholarship for Memon Students." The scholarship is to be awarded to the Memon candidate who passes highest in the Matriculation Examination. The Senate has accepted the kind offer and has passed certain regulations in regard to the scholarship.

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A new set of rules and regulations for the course of studies prescribed at the College of Science, Poona, for those who desire to qualify (1) for the grade of Forester, and (2) of Ranger in the Forest Department has just been published.

* * *

Before entering the college classes, candidates for the office of Forester must have passed the 4th standard for Anglo-Vernacular Schools, and those for the post of Ranger must have passed the Matriculation or University School Final of the Bombay University with Mathematics as one of their optional subjects.

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Vice Mr. R. V. Sulnis, B.A., resigned, Mr. B. N. Nabar, B.A., has been appointed Head-master of the Thana High School and Mr. H. G. Godbole, B.A , Head-master of the Ratnagiri High School.

* * *

During the absence on leave of Mr. K. D. Naegamvala, Mr. F. M. Dastur, M.A., acts as First Master and Curator of the Observatory and Lecturer in Astronomy and Optics, College of Science, Poona, *vice* Mr. Naegamvala; while Mr. B. H. Pavri, L.C.C., acts as Head-Master of the College of Science *vice* Mr. H. M. Page.

Dr. Kavasji Hormesji, G.G.M.C., has been appointed by the Municipal Corporation of Bombay as their representative on the Board of the Victoria Jubilee Technical Institute *vice* Dr. Thomas Blaney, C.I.E., resigned; while Mr. P. C. H. Snow, I.C.S., Municipal Commissioner has been appointed on the same board *vice* Mr. H. A. Acworth, C.I.E., resigned.

* * *

We are glad to hear that the Bombay Branch of the Royal Asiatic Society no longer suffers from absentecism as does the University. The Hon'ble Mr. Justice Jardine has resigned and Dr. P. Peterson, Professor of Sanskrit at the Elphinstone College, has been chosen President.

* * *

It is with deep regret that we record the death of Mr. J. P. Phythian, Principal of the Victoria Jubilee Technical Institute. Mr. Phythian had held the post of Principal since June 1888 and had always devoted himself heart and soul to his work and contributed in no small measure to the spread of technical education in the Presidency. He had long been suffering from asthmatic colds but his complaint had not been deemed serious and he continued to attend to his classes till the day before his death. On Sunday, July 19th, complications suddenly set in and he died in a few hours. Mr. Phythian was a J.P. and a Fellow of the University of Bombay and a C.E. of Glasgow University. He leaves behind him a widow and four children in rather straitened circumstances.

* * *

Mr. H. Maine has been appointed *sub pro tem* Principal of the Institute.

* * *

The Senate met on Monday, July 27th; there were a number of small items on the agenda paper which provoked but little discussion. The letter from Government announcing the withdrawal of the annual grant of Rs. 5,000 to the University however led to a lively debate. There is, of course, much to be said both for and against this act. The University is able to support itself at present. The annual statement of accounts, just to hand, shows a cash balance of Rs. 56,627 to its credit. The balance at the end of the previous financial year was Rs. 35,920, so that the University is at present earning an annual profit of Rs. 20,000. It might also be argued that the University should be independent of Government aid as is the case at Madras and Calcutta and that the present grant is so small that it really cannot make much difference one way or the other. Against this might be urged that the University has to charge very high fees to make both ends meet and having little

or no endowments must endeavour to accumulate a certain amount of capital and to this end an annual grant of even Rs. 5,000 is a great help and makes it possible on emergencies to ask for more.

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The University, moreover, is unable to carry out various much-needed reforms owing to the lack of funds. Higher Education can never be self-supporting if it is at all to be within the reach of any but the very rich. We must, therefore, agree with the Hon'ble Mr. P. M. Mehta that as long as Government controls the University they ought to contribute something towards its cost.

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The reorganisation scheme of the Educational Department is out at last but we prefer to suspend judgment upon it till we see how it pans out for Bombay.

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BURMA.

We are in receipt of a copy of the fourth Annual Report of the Rangoon Teachers' Institute for the year ending 31st March 1896. The Institute is in a good financial condition, the balance to its credit after paying Rs. 2,400 towards its expenses being Rs. 275. It has a good Library with a large collection of useful books, and almost all educational officers of the town are members of it.

MADRAS.

Mr. Krishna Menon, who was undergoing training in the Cirencester Royal College of Agriculture as a Government scholar has resigned his appointment in the Agricultural College, Saidapet, where he was an assistant before he left for England, and has ceased to be a Government scholar. He has, we hear, thoughts of qualifying himself for the Bar.

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The following ladies and gentlemen are appointed members of the committee to draw up the question papers for the ensuing Lower Secondary Examination :—Mr. A. A. Hall, M.A. (*Chairman and Secretary*); Miss A. Arnold; M.R.Ry. P. Annachariar, B.A.; Mr. S. P. D'Sylva, B.A.; Rao Bahadur V. Krishnamachariar; Mr. P. E. Messinier.

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The Principal of the Civil Engineering College has notified that 2 Civil Engineers and 13 Engineer Subordinates completed their training

in the College on the 30th June last, and are available for work in the Public Works Department, having successfully passed the requisite examinations.

* * *

The Director of Public Instruction has prescribed a new form of half-yearly fee return for Government Institutions, as the old one was found to be defective in certain particulars, and consequently a satisfactory check of the entries was not possible. He has also ruled that the head of each institution should carefully scrutinize or arrange for the scrutiny of, all the registers he is required to keep, and affix his initials with date in proof thereof.

* * *

Mr. Alfred Chatterton, Professor of Engineering, Madras Civil Engineering College, in the course of the address delivered by him at the prize distribution of the Madura Technical Institute last month made the following practical suggestions which we commend to the earnest attention of our readers.

"In other parts of the world, such as in Europe and in America, Industrial Schools had been tried on a large scale, and those who were acquainted with their history knew well that, to a large extent, they had proved more or less failures. In India, however, the circumstances were different, and for several reasons, Industrial Schools, such as the institution at Madura, had a very wide field before them. Very often they wanted work done for them which they felt they could not get done satisfactorily in the bazaar, and, as far as he was able to judge, the bazaar artisans had not been keeping pace with the development which was going on in other respects in this country. Moreover, these artisans were conservative in the extreme; they carried on their trade with the tools and in manner of their forefathers, and they were not able to meet the demands which the modern social and material development of the country required. There was no doubt that, if there was a competent body of blacksmiths and carpenters, such as were trained in that institution, very much could be done to improve the agricultural prospects of a greater part of the country by improved means of lifting water, and by affording the ryots the means of getting repairs done. Instead of the ryots sending their sons to schools and colleges in the hope of their getting Government employment, or to rise to be Pleaders and Vakils, they would do well by giving them an opportunity of learning a trade. In Bellary, they had very good blacksmiths; on the West Coast very good carpenters; and in Kumbakonam the metal workmen were celebrated for their skill; but elsewhere the work was very much below the level of the work done in these particular places."

* * *

The educational budgets of the various Government Institutions

are due at the office of the Director of Public Instruction on the 31st August 1896.

* * *

The Director of Public Instruction has, at the suggestion of the Government Solicitor, issued the following instructions for the cancelling of the bonds executed by students on their admission to Training Institutions, and for the return of the certificates produced by them at such admission.

1. The bonds executed by students on entering a Training Institution should be returned to them when all the conditions of the bond have been complied with, and no claim under the bond can arise. Before the bond is returned, the word "Cancelled" should be written across the face of it.

2. The certificates of health, age and conduct should be kept until the terms of the agreement have been fulfilled, when they should be handed over to the teacher along with the bond. The education certificate may be returned to the students on their leaving the Training Institution.

3. Certified copies of the health, age and conduct certificate can be given by the head of the Institution at any time, if necessary.

* * *

The Director of Public Instruction has called the attention of the officers of the Educational Department to the want of uniformity of colour in the belts worn by the peons of the department, and has directed that, when ordering new belts, the colour prescribed by Government, *viz.*, *orange edged with blue*, should be adopted. The Superintendent of the Reformatory School, Chingleput, undertakes to supply the same.

* * *

The Director of Public Instruction has called upon the Principal and the Vice-Principal of the Teachers' College to draw up a scheme of study with considerable detail for the efficient teaching of Discipline in Training schools for the written test of the Teachers' Certificate Examination under the various heads in which the subject is divided in section VIII. of the Madras Educational Rules recently sanctioned by Government.

* * *

A test in Dictation has been added to the Hand-writing test which was hitherto the qualifying examination for Matriculates and First-in-Arts men for admission to the public service. The first examination under the new designation—Hand-writing and Dictation Tests for Undergraduates—will be held on the 1st December next. The addition to the test is very necessary and could, with great profit, be extended even to

B.A.'s, for spelling, as a rule, is very much neglected in schools, and it frequently happens that a well-written letter is quite marred by slips in orthography.

* * *

On the recommendation of the Director of Public Instruction, five scholarships of one rupee each in the 1st and 2nd standards and five of Rs. 2 each in the 3rd and 4th standards are to be awarded by order of the Government of Madras to promising Savara pupils. When a few of these have passed the 4th standard examination, they are to be employed as teachers in schools which may be opened specially for the Hill Savaras. The monthly cost of these scholarships will be Rs. 32-8, but the full number is not expected to be taken up for some time to come; the expenditure will be met from general savings in the budget allotment for scholarships. It is only a tentative measure. If the scholarships are not all taken up by Savaras, they will be given to Khonds, should any apply for them. Only promising pupils will be allowed the benefit of this new arrangement.

* * *

The special subject in the History of Education for the L.T. Degree Examination for 1898 is the same as for 1897 *viz.*, the Educational Theories of Plato.

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The Hon'ble Dr. Duncan, Director of Public Instruction is now on tour in the Madura and Tinnevelly Districts.

* * *

Dr. W. H. Wilson, of the Presidency College, has been appointed an examiner to the B.A. and M.A. examinations in Chemistry of the Calcutta University. He will set the first Honour paper for the B.A. and the theoretical portion of the M.A.

* * *

The examination for Sir Isaac Pitman's certificate, in short-hand writing will be held on Saturday, the 29th instant at 3 P.M. in the premises of the Madras Short Hand Writer's Association.

* * *

An Annual Meeting of the Senate of the Madras University will be held on the 28th August 1896, at 5 P.M. when the following business will be transacted :—

1. Confirming the recommendation of the Syndicate that the several Faculties for the present year be constituted as in 1895-96 with certain alterations.
2. The election of Presidents of the Faculties of Arts, Law, Medicine and Engineering.
3. Adoption of the recommendation of the Syndicate that its re-

port for the period extending from the 1st August 1895 to the 31st July 1896, be accepted.

4. The election of the Syndicate.

5. To propose candidates for election as Fellows by graduates of the University.

6. To consider certain recommendations made by the Syndicate with regard to the production of certificates of exemption and the acceptance of the endowment of Rs. 1,500 from Mr. Fischer of Madura for the purpose of awarding an annual gold medal.

7. To consider the report of the Committee appointed by the Senate at the meeting held on the 1st November 1895 in regard to the terms on which the University of Madras should be affiliated to the University of Cambridge.

8. To consider the proposition of Muhammad Azizuddin Hussain that "in consideration of the poverty of the Mussulmans and their backwardness in points of higher education, Mussulman candidates appearing for the University Examinations should be required to pay only half the admission fees prescribed for such examinations."

* * *

Rev. J. A. Vanes, B.A., has been appointed a member of the Mysore Local Examination Board, in place of the Rev. J. Hudson, deceased.

* * *

The Rev. Mr. J. Cooling, Principal of the Wesleyan Mission College, succeeds the Rev. Mr. Skinner as Vice-President of the Madras Teachers' Guild. Mr. V. S. Vasudevachari, Head Master of the above Institution, is appointed Secretary, in place of Mr. S. Sathianadhan, who has proceeded to England on furlough.

* * *

An analysis of the failures in the recent written test of the Teachers' Certificate Examination shows that, out of 214 candidates that failed to secure marks required for a trained teacher's certificate, as many as 153 or nearly 70 per cent failed in Methods of Teaching; 102 candidates or nearly 48 per cent failed in Discipline, while only 24 or nearly 11 per cent failed in Organization, Returns, &c. The disparity in the results is very great, and this is, no doubt, due to want of uniformity of standard in the question papers set in the various subjects. This is not the first year in which such variations have occurred. Last year also, the largest number of failures was in the Methods of Teaching, while in the year previous, the candidates fell victims to the severity of the examiner in Discipline. The examination is conducted by a Board consisting of distinguished educationists, and yet such unaccountable results as those quoted above are allowed to continue.

We are in receipt of a copy of the notice announcing that a Tamil Journal of Education specially intended for Primary and Lower Secondary teachers will be published under the editorship of a trained Licentiate in Teaching from October next. That a Journal of the kind mentioned above has not hitherto been published is very strange, seeing that a large number of the teachers employed in Primary and Lower Secondary Schools belongs to Tamil districts. A Journal of Education in Telugu is successfully conducted by a trained student of the Teachers' College at Masulipatam, and it has a large circulation in all the Telugu Districts. We sincerely trust that the efforts of another trained student of the Teachers' College to give one more useful educational magazine to the teaching profession will have the warm support of all educational agencies. The subscription for the Journal is fixed at a rate that will enable even the poorest pyal school-master to purchase; application for registration should be made to V. Ramaswami Aiyar, B.A.L.T Head Master, Hindu Theological High School, Madras.

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The members of the Teachers' Guild were taken round the Museum by the Superintendent Dr. Thurston on Saturday, the 15th instant, and he explained to them the history of the various geological and archæological specimens kept there from an educational point of view.

* * *

We hear it on the authority of an inspired writer in a contemporary that all the members of the Madras Educational Graded Sevice intend taking the new Scheme except Dr. Wilson and Mr. Bilderbeck. Dr. Bourne and Mr. Chatterton are still wavering.

* * *

The Presidency College Literary Society has arranged to have a series of lectures delivered during the current term on the English constitution in its various aspects by the following gentlemen:—

Legal.—H. J. Allen, Esq., M.A.
Social and Economical.—J. H. Stone, Esq., M.A.
Religious.—Rev. F. W. Kellett, M.A.
Literary.—Mark Hunter, Esq., B.A.
Political.—P. H. Sturge, Esq., M.A.

The first of the above series of Lectures by Mr. H. J. Allen, was delivered on the 18th inst., and Mr. Justice Boddbam, presided.

PUNJAB.

Babu Chandra Nath Mitra, Assistant Registrar, Punjab University, is officiating as Registrar during the absence of Dr. Stein, whose services have been placed at the disposal of the Kashmir State for literary work in connection with Sanskrit manuscripts.

* * *

The Syndicate of the Punjab University has approved of a recommendation of the Medical Faculty, made on the representation of the Principal, Lahore Medical College, for altering the dates of the examinations for the L.M.S. and M.B. examinations from the 3rd Monday in April to the 3rd Monday in June, such change to take effect for the 1st L.M.S. and 1st M.B. examinations in 1900 and for the 2nd L.M.S. and 2nd M.B. examinations in 1897. It seems obvious that such a change is necessary, as the holding of the examinations on the present dates is the cause of many eligible candidates being debarred from entering the College for nearly a year after they might, otherwise, do so and also results in considerable loss of time to candidates who fail for the University Examinations.

* * *

The following is the text of the original resolution under which the University instituted the annual Athletic Sports Tournament for Colleges in this Province, the first of which will be held this year. It runs thus and may be open to other Universities :—

"The Vice-Chancellor, in laying before the meeting a proposal relating to the establishment of University Athletic Sports, expressed his opinion that the time had arrived when it would be desirable for the University to emphasize the necessity of combining higher mental attainments with sound physical training ; he thought, further, that the institution proposed would also be of great value as a means of drawing the Collegiate Institutions of the Province closer to the common body of the University. After the Vice-Chancellor had pointed out that the general purpose of the University being to promote higher education in the Province, arrangements for the encouragement of physical training would seem to come within its proper sphere of activity, and as Dr. Sime, Dr. Ewing and several others of the members present had given expression to their gratification at the proposed departure, the Syndicate recorded its opinion that, under Statute VII (*g*), the University was authorized to devote a part of its current income for the encouragement of Athletic Sports as coming under the head of higher education, for the promotion of which the University was constituted."

The Tournament will be open to the members of the University who have passed the Entrance Examination, and whose names at the time of competing are kept on the rolls of the following institutions :—

1. Oriental College, Lahore.
2. Government College, Lahore.
3. St. Stephen's College, Delhi.
4. Forman College, Lahore.
5. Dayanand Anglo-Vedic College, Lahore.
6. Municipal Board College, Amritsar.
7. Scotch Mission College, Sialkot.
8. Mahindra College, Patiala.
9. Egerton College, Bahawalpur.
10. Law School, Lahore.
11. Medical College, Lahore.

The Patiala and Bahawalpur Colleges are institutions in the two leading Native States in the Province.

* * *

An extraordinary meeting of the Council of the Khalsa College was held at Lahore on the 2nd instant, Mr Campbell Oman, Professor Government College, presiding, to consider the question of funds required to complete the construction of boarding houses. After careful consideration, the Council sanctioned the transfer of Rs. 10,000 from the current expenses fund to the building fund. One Sikh gentleman proposed that the Council should offer shares at Rs. 20 for the sum required to complete the building of boarding houses and this proposal was carried. A Sub-Committee was then appointed to report in connection with a piece of land which was purchased to construct a school building in the city of Amritsar, and the Secretary was asked to appeal to the members of the Council to contribute funds towards the building. It was finally decided that the financial state of the building fund should be intimated to His Highness the Raja of Nabha, one of the leading Sikh Chiefs in the Presidency, who should be asked to pass orders for the payment of the sum of Rs. 27,000, which His Highness very kindly granted specially for the building fund on the occasion of a visit to the site of the College at Amritsar.

* * *

A special Sub-Committee, consisting of the Director of Public Instruction, the Registrar of the Punjab University and the Deans of the several Faculties has been appointed to consider thoroughly the question of granting the annual bonus to the establishment of the Registrar's office. Papers had been placed before the Syndicate showing the amount of extra work done by the establishment and the Assistant Registrar

from October 1895 to May 1896, in connection with the preparation and conduct of the Middle School and University Examinations, and the bonus proposed, according to the custom of previous years, for this extra work. Much discussion ensued as to the principle on which the bonus can be allowed for extra work involving great personal sacrifice and responsibility ; and while it was resolved to pass the amount as in previous years, the strong Sub-Committee above mentioned, was appointed to report on the arrangement for the future.

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The Punjab Education Department is busy adapting the recent Government of India reorganization resolution to the requirements of the present graded and subordinate establishments. It will prove a work of considerable difficulty, but orders may be expected perhaps towards the end of the current month. On the return of Mr. Bell and the retirement of Rai Bahadur Sagar Chand about November, there will be further important changes in the Department, and, later on, Mr. Oman's retirement will necessitate another shuffling of appointments.

REVIEWS OF BOOKS.

ELEMENTARY PRACTICAL PHYSICS. By William Watson, A.R.C.Sc., B.Sc. London: *Longmans, Green & Co.*, 1896. Price 2*s.* 6*d.*

This neat, cheap, little volume is intended to create in the students that habit of careful observation and faithful recording, which is the requisite of a successful explorer in the realm of nature. This book embodies the changes in the method of teaching elementary physics to beginners as recommended by the Science and Art Department, and the requisites of the various examinations in science of the University of London. Exercises in each part are numerous and well arranged, and we think the author has been circumscribed in their selection to suit his main object, *viz.*, to assist a course of practical physics with a list of apparatus, the cost of which and the annual outlay to keep the laboratory in an efficient condition, is very small.

Additional exercises are also given at the end of some parts to test the style and readiness of the students in handling the instruments. In other parts, exercises are suggested at the end of each exercise. The results of these not being given in the book, the student has to find them from his individual observation to be finally corrected by the instructor, and hence he is trained to become an unprejudiced observer.

The chapter on the Geometrical Representation of Varying Quantities is of great value. Progress in science is nothing if not quantitative. This, the author has always in his mind. The students are required to plot out curves, wherever possible, and to study their nature. Such curves are of great value to correct and even to avoid errors and facilitate the work, since the curves suggest the quantitative laws which govern the physical quantitatives. It is extremely useful that the students should be trained to this habit from the beginning.

By the way, the author insists on a laboratory note-book being kept by each pupil and the mean of a number of observations being taken as a source of avoiding many errors.

The various figures in the book have been taken from actual photographs taken of the apparatus, and each figure has attached to it a ratio, which would be highly useful to suggest to the teacher and the students the size of the instruments recommended. The order of treatment of the exercise is natural, the explanations and methods are simple and clear. However, we would suggest that Exercise 38 might be made simpler by requiring a smaller number of observations, *viz.*, (i) the weight of the sinker in water only, (ii) the weight of the body in air, (iii) the wieght of the body in water. We believe that such a course might be gone through with great advantage by every student of science of this university and for which we are glad to say that this book will be found extremely useful.

Bacon's New Handy Atlas of Modern Geography.

London : *G. W. Bacon & Co. (Ltd.)*

As its name indicates, this publication is truly a handy volume. There are 31 plates, representing the world in hemispheres, the five continents, and the important countries of each continent. The maps are brought up to date, the result of the latest researches and investigations being embodied in them. This is more strikingly the case with the "Dark Continent," which appears no longer a huge blank as it once did, but is studded with cities and towns, hills and dales, thus vying with the most densely peopled spots on the globe. The usefulness of each plate is enhanced by separate corner-sketches of important towns or districts. Thus, in the map of North America, we find New York separately represented, London, Liverpool and Bristol in the case of England and Wales, Bombay and Calcutta in India and so on. In addition to the railway routes and canals, which are usually marked, the book under review gives the steam routes of the world with their respective distances. At the beginning of the atlas, there is an alpha-

betical list of countries shewing area, form of Government, and population, which will be found very useful for purposes of reference. An index-gazetteer giving the clue to the position of new or insignificant towns, rivers, &c., forms the appendix. The colouring of many of the plates is not bright, so that the outline of a country or a province can be traced only with some effort. We fail to see why Belgium should appear on two distinct plates, first as an appendage to France and again to Holland. In other respects, the printing and binding are excellent. The crimson cloth bound atlas will be of great use to every schoolboy and will well serve as a book of reference to the general reader.

A HISTORY OF ROME TO THE DEATH OF CÆSAR. By How and Leigh. London: *Longmans, Green & Co.*

History would seem in a fair way to become as over-written a subject as either Classics or Politics. The making of handbooks continues as merrily as though the Preacher had never uttered his word of wisdom on behalf of the race of reviewers. One has by this time indeed grown accustomed to the sight of classical scholars painting the lily. It seems incumbent on each of them as part of their code of honour to produce an annotated edition of at least one book of Virgil or play of Euripides; the monotony of the performance has brought us a kind of resignation. Since History has been taken as a serious study, it seems destined for the same melancholy fate of reiteration. *Mais ou sont les neiges d'antan?* What becomes of the previous editions? Are they taken out and solemnly sunk in the deep sea like contraband tobacco, or are they bought up cheap by the missionaries and shipped off to stay the mental hunger of cannibal races? Joking apart, is there not a waste of force in this perpetual journeying over well-travelled roads? Can the average handbook writer be honestly described as productive in the economic sense; does he indeed create utilities? We can scarcely believe that the English schoolboy is in such need of fresh handbooks as their prefaces would seem to imply. For parents and teachers, the question is not an altogether unimportant one; while the latter are carried along in the desire to adapt their methods to the latest standard, the former have, in vulgar speech, to "pay the piper." We have sometimes wondered what is the exact connection between the issue of handbooks and the terms on which Fellowships are held at our English Universities. It is generally considered desirable not to renew a Fellowship, unless its holder has given evidence of doing work; thus those not actually engaged in teaching are driven to the pen. Strange if the day should ever dawn when non-production of a handbook will be made

an essential condition to renewal! The pursuit of the ideal is no doubt highly laudable *a priori*: considered a *posteriori* however, there can be little question that it too often results in production of the common-place.

Such were some of the considerations to which receipt of the above volume gave rise. We remembered that only a year or so ago, a History of Rome was reviewed in these pages; then it was a Cambridge Fellow who started in pursuit of the ideal: now two Oxford Dons follow suit. Is the better class schoolboy incapable of studying Mommsen without extraneous assistance? On examining the work of Messrs. How and Leigh, we find what we naturally expect from the School of Freeman—a straightforward narrative aiming at accuracy not effect, abreast of the most recent opinion. If not exactly inspiring, the style is at least reliable; though we miss the vividly illuminating touches of the master, we feel that we are in the hands of respectable scholars. In a volume of over 500 pages, the development of Rome on its political and constitutional sides is set forth with judgment and sobriety. A special feature of the work is the effort to bring the past before the eye of the student in its most literal sense. The text is supplemented with some excellent maps and numerous interesting designs of places and antiquities. In this respect, indeed, the book reminds us of Gardiner's 'Student's History of England.' In both cases, the development of pictorial history in its new sense is plainly seen. Its growth, we would fain believe, is but another side of the reverence for original authorities animating our present history schools. The practice is, by no means, as insignificant as some might imagine—especially in the case of Indian students. An appeal to their physical as well as mental sight is, we believe, not only valuable but necessary. Teachers are too apt to forget that, in dealing with the facts of western civilisation, either past or present, they convey probably but very ineffective impressions to the eastern mind. We have often wondered, for example, what a native student understands by the word "factory" so glibly used by the economist. Hence of two works equally well written, we would always recommend to the native student the one that most plentifully assists him with physical conceptions. Thus he has the best chance of getting something more than a mere verbal acquaintance with our puzzling western life. For this reason, we have thought well to draw special attention to this feature of the latest History of Rome.

TRANSLATION GUIDE. By G. Narayana Rao. Ongole: *P. V. Press.*

This little book is intended for use in the first three forms of schools for teaching translation from Telugu into English. It contains more

than 80 lessons embracing varied forms of Simple, Compound and Complex Sentences. The author furnishes in every lesson a model and its translations and gives for exercise four sentences to be rendered after the model into English. The book in itself does not constitute the whole course of translation and the teacher is recommended to work out with the aid of this book on the lines indicated therein. The sentences are suitably chosen and the pupils are afforded facility in learning the models and exercising their knowledge of the form of translation. We believe that the book will be found useful for the classes for which it is intended.

JACKSON'S COMPENDIUM. By John Jackson, F.E.T.S.
London: *Sampson Low, Marston & Co.*

This little book is a companion to the author's larger work "The Theory and Practice of Writing" and forms a practical guide-book to the teaching of the upright system of Handwriting. Among the many reasons urged in support of the vertical kind of writing, one that the author lays special stress on, is the facility that this system affords for ambidexterity in writing. The aim of the Compendium is indicated by what the author himself says regarding it: "we confidently predict that the teacher who intelligently carries out the directions given in this Compendium will obtain from the materials he has to work upon the highest available standard of excellence with the least expenditure of effort possible."

The first seven chapters of the Compendium relate to the preliminaries and preparation for teaching writing, and each chapter, after noticing the chief points to be attended to, concludes with a summary in the form of directions, brief and to the point, for the teacher to attend to. The chapter on "Method of Teaching" is very instructive. The author exhorts the teacher to discard the various other methods of teaching writing and to take up at once with boldness and with certainty of success his headline copy books and combines with these blackboard demonstration and illustration. The course prescribed consists of three stages, the first on the 'preparative'—training the pupil to the movements of the hand and the fingers, the second is the 'imitative'—occupied with copy book practice leading by a slow mechanical process to produce facsimiles of the models presented, and the third is the 'applicative'—preparing the pupil to acquire a rapid, elegant and legible current hand. In each of these stages, the author strongly recommends the adoption of the left hand writing also.

The book is fully instructive and suggests admirable hints for teach-

ing writing. To those teachers who adopt the vertical system of writing, the book is simply invaluable and it is sure to be of great help even to those who take the sloping hand and train the pupils in it.

Upright Penmanship Copy-Books :—The St. Dunstan Series; The Vertical Writing Series; and The New Code Series. London: *Sampson Low, Marston & Co.*

The abovementioned three series of copy books follow Jackson's new style of vertical writing. The first series consists of 8 numbers, the next of 15, and the last 25 numbers. The plan of each of the series is essentially the same. The vertical kind of writing is now being more and more widely adopted and the series now before us are well adapted for carrying out the directions found in Jackson's Compendium. The style, the paper and the printing have our hearty approval and we especially recommend for adoption in our Indian schools the New Code Series which are designed to meet the requirements of the English Code for each of the seven standards. In this series, there are more copious exercises for the pupils in "tracing"—a means by which the fingers of the children, in the elementary stages of writing, are made more steady, and a larger number of copies for practice and imitation.

The Beginner's Drill-Book of Problems in Arithmetic.

By D. Srinivasa Aiyangar. *Thompson & Co.*, Madras:

This book of Problems in Arithmetic is intended for use in the Upper Primary and Lower Secondary Schools and covers the range of the subject to the end of Simple Interest. The book is divided into sections and the author recommends certain sections to be gone through in certain classes. Besides the series of examination papers, there is in the book a collection of over 1,500 problems distributed among the several varieties of the kind of problems. Each kind of problem has a model solution worked out clearly and neatly and a copious number of exercises is furnished for practice. The author has bestowed great pains in the selection and arrangement and has also reserved a portion in the book for holiday exercises. We are glad that this book has reached the third edition and hope that pupils will continue to value this excellent collection of problems.

Longmans' Geographical Series, Book III.

London: *Longmans, Green & Co.*

This is the third volume of a series of Geographies in five books, and is intended for the use of senior students. It begins with chapters

on Mathematical and Physical Geography, and the various phenomena connected with these branches, which have a near relation to geography, are briefly and clearly explanied and illustrated by appropriate diagrams and charts. Then follows General Geography treating of the continents and the countries. The surface build of each continent is explained by a clear relief map and each country is provided with a map containing all the names mentioned in the text, so that a separate atlas will not be needed for use along with this book. A set of examination questions accompanies the treatment of each of the countries, and a list of proper names with their pronunciation is furnished at the end of the book: but we should prefer to have the pronunciation by the side of the names in the text. The get-up of the book is excellent, the important names are printed in thick type, and the maps are neat and clear. The heads of treatment are arranged in the natural order leading to an intelligent and logical connection between the parts. The selection and arrangement of the matter and its general completeness and usefulness entitle the book to be in the hands of every High School pupil.

RIDERS IN EUCLID. By J. Hamblin Smith, M.A.
London: *Longmans, Green & Co.*

This book contains 131 exercises, of six deductions in each exercise. It is a graduated collection of easy riders in the first three books and the fourth and sixth books of Euclid. As regards arrangement, the author says: "These exercises are set out in what I call the vertical and horizontal arrangement." The deductions may be taken up for solution in the order in which they stand, or the first in each of the exercises, then the second, and so on, may be selected. The arrangement displays great care, and pupils and teachers will be greatly helped in their progress in solving deductions. The name of the author is very familiar in our schools and his books are very popular; this itself is a guarantee of the usefulness of this collection, and we readily recommend the use of this book in our schools.

MACMILLAN'S GEOGRAPHY READER. Books 5 and 6. 1*s*.6*d*.

The countries of Europe and the colonies of Great Britain are taken up and very fairly gone into in these volumes. The reading throughout is intelligible and plain and admirably suited to pupils of the higher forms. All that is distasteful to and considered dry by the pupil is eliminated by the author. Seldom are figures used in the size of countries. All this and other geographical points now committed to memory and of use for an examination are summarised in a few pages

at the end of each volume. As the pupil reads, besides storing his mind with geographical points, he acquires much general information. As each country is described, the historical events of recent date, the scenery, national characteristics, educational progress, &c. are sketched. The maps are clear and not over-crowded with names. Illustrations abound, comprising *The Winter Palace*, *Vesuvius*, *The Forum*, *A Boer*, *Gibraltar*, *The Lapps*, *Niagara*, *A Bulgarian*, *the Colosseum by Moonlight*. Verse is apporpriately inserted. Under Russia, there is Tennyson's famous 'Charge of the Light Brigade,' while under India, there are lines on 'The Defence of Lucknow.' The chapters on climate, day and night, and the Seasons, are excellent. A special feature of these books is the durable binding to keep together the back.

BOOTLE'S CHILDREN AND OTHER TALES. By John Strange Winter. I Vol.
A FIGHT WITH FATE. By Mrs. Alexander. I Vol. *George Bell & Sons.*

"Of the making of books there is no end, since man is born to trouble as the sparks fly upwards." We can, after a careful perusal of these two books, come to no other conclusion as to their *raison d'etre.* The first contains most pitifully small chronicling of the smallest beer possible.

Oh John! strange writer of cold discontent,
Makes hot our anger as thy puppets talk.

Why must all the brother officers laugh when 'Bootles' or 'Lucy' open their lips? We have tried hard to see the jokes over which the poor fellows strained their diaphragms, and we are not Scotchmen and flatter ourselves we can see as far into a stone wall as other men, but 'Bootles' and 'Lucy' are too thick for us. Does John Strange Winter consider that most English officers are laughing jackasses? This is the only explanation that suggests itself to us. We reject this as too absurd a mistake for even J. S. Winter to perpetrate. By the way, one of the men accomplishes a difficult feat, he 'laughed in a whisper.' This is almost the only novel incident in the book, and we must leave it to our readers to determine whether it will be worth their while to go through so much to gain so little. For much there is. The title and well-worn head-line quotations occupy at least half a page of each chapter, and there is also plenty of printer's fat; not to mention such daring feats as the quotation of two whole stanzas from "Way down upon the Swansee Ribber."

"Now for a Better Country! Vain presage." Surely, an Alexander should wield a weightier weapon than that which has carved out this "Fight with Fate;" but perchance this may be explained by the fact

that 'the fight' and 'the fate' are quite undiscoverable, and, as we know, the Alexander is equally apocryphal. We have the well-known family mansion so often described in the pages of the *Family Herald*, the disillusioned penniless peer, the ingenuous female dependent, the ill-bred heartless mistress, the faithful family lawyer, and the only spice to this—"Our well-known Mixture" is the Australian Millionaire "with the yellow clay still adhering to his digger's boots" as is several times picturesquely observed, who enfolds peer and peri in the embrace of a long-lost relation. The manner of writing, we cannot say 'style', reminds us somewhat of the passage from "The Lady Flabella" which Mrs. Wititterly so much admired: "excellent, if costly, hotel," "deep, but refined voice," "tall and bony . . . but eminently good style," are a few relics of our "Fight with Fate," but what can be said of "invited to refresh with much aimiability"? *Infandum!*

Now why do publishers publish, and why do readers read books without humour, characterisation, incident or plot? Why does it pay, for that is the foundation of this seemingly baseless fabric, to write again and again in poorest English the most ordinary acts of the most commonplace persons? No doubt the growth of the reading public will explain the problem to a large extent; the novel is now read by numbers of people whose experience is limited to their own class, and to whom any information about those "who toil not, neither do they spin" is greedily devoured. Also numbers of people care not what they read; they require a *soporific* for a weary mind, and ask for no more than to be withdrawn from their own dull never-ending cares. To watch the mimic fight of circumstance, to sit above the conflict like the gods above the world and see a fictitious Providence shape the destinies of men and women, punish vice and reward virtue, is not this a delight which will explain some of the success of the *fatuous* novel, and the Adelphi melodrama? To see on the stage a real fire-engine spouting real jets of water, or real race-horses, thousands will flock who have run after the fire-engine in the streets, and assisted at a true fire tragedy or have shared the delirium of an exciting finish. How will it be done, how can they do it? The intense curiosity of man about man provides occupation for most of his idle hours. How largely does the personal element enter into our thoughts and conversation; what is most casual talk but gossip about others, their thoughts and words and actions, which talk, if ill-natured, we call scandal? In fine, we would submit that the main ingredient of the success of the trashy novel is that intense curiosity about other people which possesses each atom of humanity. To this we fear must be added what, to call things

plainly, is a species of fraud, which is perpetrated when a writer who has made a name by one or two successful books puts rapidly into the market a series of ill-considered, ill-written, nonsensical pot-boilers. This, we consider, is as much a fraud upon the public as for a trader to sell sand under a trade mark of which the reputation has been earned by real pepper. For this, publishers as well as writers are equally to blame, and in days to come, when the whole world is governed by well drafted codes, both will be equally provided with free quarters and provisions and will be set to work to make nice clean paper out of that which they have spoilt. But from that happy period, what piles of 'shockers' and defrauded centuries still divide us!

ELEMENTARY TRIGONOMETRY. By Charles Pendlebury, M.A., F.R.A.S. London: *George Bell and Sons.*

This book is evidently the outcome of considerable research and much thought. Written mainly to meet the requirements of candidates for military examinations, it will be found useful by other students of Trigonometry as well; to the candidates appearing for our higher University Examinations in Mathematics, the book must be of great value. The solutions given are all clear and convincing, and there is a natural and easy transition from one step to another in the processes of reasoning. The identities given for solution are marked off into 'easy' and 'harder' ones. The occasional introduction of oral examples and the large and varied stock of questions add greatly to the value of the book. The chapter on Variation Curves will be found interesting, while the sections dealing with Logarithms and the Solution of Triangles—portions of the subject generally perplexing to the young learner—have been lucidly written. We can confidently recommend the publication as a useful hand-book to the student of Mathematics. The printing and binding are good.

MATHEMATICS.

Note on Question 105 *by Mr. M. T. Narayana Aiyangar, M.A.*

If TP, TQ be tangents to a parabola and PQ meet the directrix in O, then $OT^2 = OQ.OP$. For, drawing $MTpV$ parallel to the axis meeting the directrix at M, the curve at p, and the chord in V, we have

$$OQ \cdot OP = OV^2 - QV^2 = OV^2 - 4\,Sp.pV$$
$$= OV^2 - 4Mp.pV = OV^2 - (OV^2 - OT^2) = OT^2.$$

Now, because the circle PQT touches OT and OP is divided harmonically by ST and Q, the other tangent from O to the circle PQT meets it in TS produced and it is OT′, because $OT' = OT$.

Note on Question 159 by the Editor.

$$a^3+b^3+c^3=\Sigma x^2(y-z)=(x-y)(x-z)(y-z)=-\frac{a^3b^3c^3}{x^2y^2z^2}$$

$\therefore\quad (xyz)^{-1}=\sqrt{-(b^{-3}c^{-3}+c^{-3}a^{-3}+a^{-3}b^{-3})}=k$, say.

The given equations may now be written in the form :—

$$\frac{a^3}{x}=\frac{k}{y}-\frac{k}{z}\;;\quad \frac{b^3}{y}=\frac{k}{z}-\frac{k}{x}\;;\quad \text{and}\quad \frac{c^3}{z}=\frac{k}{x}-\frac{k}{y}.$$

This shows that the given equations may also be solved by putting

$$x=1/x',\ y=1/y' \text{ and } z=1/z'.$$

Solutions of Questions.

111. (*K. C. Ramamurti.*) Find the locus of the intersection of two strings connecting together diagonally two upright poles of given lengths.

Solution by V. R. Bivalkar, B.A., and others.

Let MA and NB be the poles of lengths a, b placed at distance MN.

From P the intersection of AN and MB draw PL perpendicular to the ground.

Then $$\frac{\text{PL}}{a}=\frac{\text{PN}}{\text{AN}}=\frac{\text{PB}}{\text{MB}}\;;\quad\text{and}\quad \frac{\text{PL}}{b}=\frac{\text{MP}}{\text{MB}}.$$

$$\therefore\quad \frac{\text{PL}}{a}+\frac{\text{PL}}{b}=\frac{\text{PB}}{\text{MB}}+\frac{\text{MP}}{\text{MB}}=1\;;\qquad\text{or}\quad \frac{1}{a}+\frac{1}{b}=\frac{1}{\text{PL}}$$

$\therefore$ PL is half the *harmonic mean* between a and b and is therefore of constant length. Hence the locus of P is a horizontal line or plane.

113. (*C. S. Mahadeva Aiyar, B.A.*) T is a point in the minor axis of an ellipse and CD is a diameter parallel to a tangent from T. Show that the axes of the hyperbola passing through T and having S and the tangent at A for a focus and corresponding directix are in the ratio of the co-ordinates of D.

Solution by K. V. Natesa Aiyar, B.A.

Let the co-ordinates of D, P be $(a\cos\alpha,\ b\sin\alpha)$, $(-a\sin\alpha,\ b\cos\alpha)$.

The equation of PT is $\dfrac{x\sin\alpha}{a}-\dfrac{y\cos\alpha}{b}+1=0$; $\text{CT}=b\sec\alpha$.

For the hyperbola whose semi-axes are A and B

$$\frac{\text{A}^2}{\text{B}^2+\text{A}^2}=\frac{1}{e^2}=\frac{\text{TR}^2}{\text{ST}^2}=\frac{\text{CA}^2}{\text{CS}^2+\text{CT}^2}=\frac{\text{A}^2}{a^2+b^2\tan^2\alpha}$$

$$\therefore\quad \frac{\text{A}^2}{\text{B}^2}=\frac{a^2}{b^2}\tan^2\alpha\;;\ \frac{\text{A}}{\text{B}}=\frac{a\cos\alpha}{b\sin\alpha}=\text{ratio of co-ordinates of D.}$$

117. (*S. Anantanarayana Aiyar.*)

If $(p+q+r)(p+q+s)=(r+s+p)(r+s+q)$,

then each $=(q-r)(p-r)(p-s)(q-s)(p+q-r-s)^{-2}$.

Solution by K. V. Natesa Aiyar, B.A., and others.

Let $p+q+r+s=a$, then $(a-s)(a-r)=(a-p)(a-q)$

or $a(p+q-s-r)=pq-sr$ ... ... (1)

Again $(p-r)(p-s)=p(p+q-r-s)-(pq-sr)$

$=(p-a)(p+q-s-r)$ ... ... from (1)

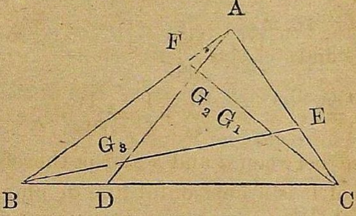
also $(q-r)(q-s)=(q-a)(p+q-s-r)$

$\therefore$ $(p-r)(p-s)(q-r)(q-s)(p+q-s-r)^{-2}=(a-p)(a-q).$

123. (*T. Sundara Row, B.A.*) On the sides BC, CA, AB of a triangle ABC, points D, E, F are taken such that BD, CE, AF are in a given ratio $m:1$ to the respective sides. BE, CF, and AD cut each other in order in G_1, G_2, and G_3. Prove that

1. $\dfrac{EG_1}{CG_1}=\dfrac{FG_2}{AG_2}=\dfrac{DG_3}{BG_3}=m$
2. $\dfrac{CG_1}{CF}=\dfrac{AG_2}{AD}=\dfrac{BG_3}{BE}=\dfrac{m}{m^2-m+1}$
3. $AD^2=m(m-1)a^2+mb^2-(m-1)c^2$.

Solution by K. V. Natesa Aiyar, B.A.



Considering the triangles ABD and ACD,

$\dfrac{\sin BAD}{BD}=\dfrac{\sin D}{AB}$, and $\dfrac{DC}{\sin CAD}=\dfrac{AC}{\sin D}$;

$$\therefore \frac{\sin BAD}{\sin CAD}=\frac{AC}{AB}\cdot\frac{BD}{DC}=\frac{m}{1-m}\cdot\frac{b}{c}.$$

Hence $\dfrac{AC}{AB}\cdot\dfrac{BD}{DC}=\dfrac{AC}{AF}\cdot\dfrac{FG_2}{G_2C}=\dfrac{AE}{AB}\cdot\dfrac{BG_3}{G_3E}$

i.e. $\dfrac{b}{c}\cdot\dfrac{m}{1-m}=\dfrac{b}{mc}\cdot\dfrac{FG_2}{G_2C}=\dfrac{b(1-m)}{c}\;\dfrac{BG_3}{G_3E}$

Again $\dfrac{FG_2}{G_2C}=\dfrac{m^2}{1-m}$; *i.e.* $\dfrac{FG_2}{FC}=\dfrac{m^2}{1-m+m^2}$. ... ... (a)

and $\dfrac{BG_3}{G_3E}=\dfrac{m}{(1-m)^2}$; *i.e.* $\dfrac{BG_3}{BE}=\dfrac{m}{1-m+m^2}$. ... ... (b)

(b) proves (2) of the question.

From (a) and (b) $\dfrac{EG_1}{CG_1}=\dfrac{m^2}{1-m+m^2}\cdot\dfrac{BE}{CF}\cdot\dfrac{1-m+m^2}{m}=m.\dfrac{BE}{CF}$ (c)

(c) proves (1) of the question to be wrong.

Again $\dfrac{a^2m^2+c^2-AD^2}{2acm}=\dfrac{a^2+c^2-b^2}{2ac}$,

or $AD^2=m(m-1)a^2+mb^2-(m-1)c^2$.

Also $AD^2+BE^2+CF^2=(m^2-m+1)(a^2+b^2+c^2)$.

143. P is any point in the bisector AP of the angle A of a triangle ABC, and CP, BP are joined. Show that when the difference of the angles ACP, ABP is a maximum, AC $\sin^2$ACP = AB $\sin^2$ABP.

—[*Madras B.A.*]

Solution by K. V. Natesa Aiyar, B.A.

Let p be the length of the perpendiculars PM and PN drawn from P on AC, AB respectively.

Then $\tan \text{ABP} = \frac{\text{PN}}{\text{BN}} = p/(-p\cot\frac{A}{2}+c)$;

$\tan \text{ACP} = \frac{\text{PM}}{\text{CM}} = p/(b-p\cot\frac{A}{2})$;

and $\tan(\text{ABP}-\text{ACP}) = p(b-c)/\left\{bc-(b+c)p\cot\frac{A}{2}+p^2\operatorname{cosec}^2\frac{A}{2}\right\}$

The expression ABP − ACP has its maximum value when

$\frac{bc}{p} - (b+c)\cot\frac{A}{2} + p\operatorname{cosec}^2\frac{A}{2}$ is a minimum,

i.e. when $-\frac{bc}{p^2}+\operatorname{cosec}^2\frac{A}{2}=0$; or $p^2=bc\sin^2\frac{A}{2}$; or $\text{PA}^2=bc$.

Thus the triangles ABP and APC are similar, ∠ ACP being equal to ∠ APB. ∴ sin ABP : sin ACP = AP : AB = $\sqrt{\text{AC}} : \sqrt{\text{AB}}$.

i.e. AB $\sin^2$ABP = AC $\sin^2$ ACP.

(2.) *Solution by the Editor.*

From AC cut off AB′ equal to AB.

Then ∠ AB′P = ∠ ABP, and ∠ ABP − ∠ ACP = ∠ B′PC.

This will be a maximum when the circle B′PC touches AP and therefore when AP^2 = AB′.AC = AB AC and ∠ APB′ = ∠ ACP.

Now sinABP : sinACP = sin AB′P : sin APB′ = AP : AB′ = $\sqrt{\text{AC}} : \sqrt{\text{AB}}$.

164. (*V. R. Tyagaraja Aiyar, M.A.*) Given the equations

$$x^2+2yz=a^2,\quad y^2+2zx=b^2,\quad z^2+2xy-c^2,$$

prove that the value of $x^2+y^2+z^2$ is a root of the equation in λ,

$$3\lambda^2-2\lambda(a^2+b^2+c^2)+(a+b+c)(b+c-a)(c+a-b)(a+b-c)=0.$$

(1.) *Solution by S. Venkataramanan, and others.*

Putting $x^2+y^2+z^2=\lambda$, we get $\sqrt{(\lambda-a^2)}+\sqrt{(\lambda-b^2)}\sqrt{(\lambda-c^2)}=0$, rationalizing which we have $2\Sigma\{(\lambda-b^2)(\lambda-c^2)\}-\Sigma(\lambda-a^2)^2=0$.

(2.) *Solution by A. Radhakrishna Aiyar, B.A.*

$$\Sigma a^2=\lambda+2\,\Sigma xy. \quad \ldots \quad \ldots \quad \ldots \quad \text{I}$$

$$\Sigma a^2b^2=\Sigma x^2y^2+4\Sigma x^2yz+2\Sigma x^3(y+z)$$
$$=\Sigma x^2y^2+2\Sigma x^2yz+2\lambda\Sigma xy$$

$\Sigma a^4 = \Sigma x^4 + 4\Sigma x^2y^2 + 4\Sigma x^2yz$

$\Sigma a^4 - 2\Sigma a^2b^2 = \Sigma x^4 + 2\Sigma x^2y^2 - 4\lambda\Sigma xy$

$= \lambda^2 - 4\lambda\Sigma xy$

$= \lambda^2 - 2\lambda(\Sigma a^2 - \lambda)$ ... ... from I

$= 3\lambda^2 - 2\lambda\ a^2$

$\therefore 3\lambda^2 - 2\lambda\Sigma a^2 - \Sigma a^4 + 2\Sigma a^2b^2 = 0$, which is the result required.

Questions for Solution.

173. (*S. Venkataramanan*) Prove that

$$\frac{\pi^2}{6} = 1 + \frac{1}{2}\cdot\frac{1}{3}\left(\frac{1}{2}\right) + \frac{1}{3}\cdot\frac{1\cdot 2}{3\cdot 5}\left(\frac{1}{2}\right)^2 + \frac{1}{4}\cdot\frac{1\cdot 2\cdot 3}{3\cdot 5\cdot 7}\left(\frac{1}{2}\right)^3 + \ldots .$$

174. (*T. Sundara Row, B.A.*) Prove geometrically that, in a triangle ABC, $\tan B = \dfrac{\cos 2C - \cos 2A}{\sin 2C - \sin 2A}$.

175. (*G Rama Aiyangar, B.A.*) Solve the equations :—

$$\frac{x}{a+y+z} = \frac{y}{b+z+x} = \frac{z}{c+x+y}\ ; \text{ and } (x+y+z)^2 = ax + by + cz.$$

176. (*K. V. Natesa Aiyar, B. A.*) Find the time of rising of the sign Leo in north latitude 22°30′. What other sign occupies the same time in rising?

177. (*K. V. Natesa Aiyar, B.A.*) n persons go to a garden and pluck mangoes. The first, finding that he has too many, distributes to each of the others as much as they had already. The second does the same afterwards, and so on. After the nth has distributed in his turn, they are all found to have the same number of mangoes each. Find the number of mangoes that each had to start with.

178. (*S. Padmanabha Aiyar, B.A.*) Show that the oblique trajectory of a system of confocal ellipses is given by $x = c\cos\theta\cosh n(\lambda+\theta)$ and $y = c\sin\theta\sinh n(\lambda+\theta)$, where $2c$ is the distance between the foci, and $\tan^{-1} n$ is the angle at which the curves intersect.

179. (*H. J. Woodal, A.R.C.S*) Resolve into quadratic factors the expression $x^6 - 6x^5 + 25x^4 - 58x^3 + 102x^2 - 96x + 72$.

—[*The Educational Times.*]

180. (*C. N. Cama*) An ellipse is rotated through a right angle in its own plane about its centre which is fixed: prove that the locus of the point of intersection of a tangent to the ellipse in its original position with the same tangent in its new position is the curve

$$(x^2+y^2)(x^2+y^2-a^2-b^2) = 2(a^2-b^2)xy.$$

Erratum.

The value of $\tan\theta$ in Q. 167 on page 496 of the July number should be

$$\frac{p \sin \alpha \sin(\beta-\gamma)-q \sin\gamma \sin(\alpha-\beta)}{p \cos \alpha \sin(\beta-\gamma)-q \cos\gamma \sin(\alpha-\beta)}.$$

NOTICE TO CORRESPONDENTS.

[*Mathematical contributors are requested* (1) *to write each Question and each Solution on a separate paper* (*otherwise when used for printing, the Editor has the trouble of entirely re-writing such articles*), (2) *to make their solutions as short as possible and* (3) *to write on one side only and not on both sides of the paper.*—EDITOR.]

NOTIFICATIONS.

BOMBAY.

List of appointments in the Educational Department for the month of July 1896.

3rd July 1896.—The following appointments are made in the Karwar, High School:—Mr. M. Y. N. Kasami, 1st B.A., to be 7th Assistant; Mr. A. S. Nadkarni to be 8th Assistant; Mr. M. D. Nadkarni, to be 9th Assistant; Mr. S. N. Koppikar, to be 10th Assistant; Mr. N. T. Shirali, to be 11th Assistant.

4th July 1896.—Mr. S. K. Gadre, P.E., is confirmed as 9th Assistant Master, Ratnagiri High School.

14th July 1896.—Mr. K. B. Bendigiri, B.A., is appointed 2nd Assistant Master, Dharwar High School; Mr. N. R. Mangalvedhekar, B.A., is appointed 2nd Assistant Master, Belgaon High School; Mr. S. J. Konnur, B.A., is appointed 5th Assistant Master, Dharwar High School; Mr. S. K. Nayampalli, B.A., is appointed 3rd Assistant Master, Bijapur High School.

20th July 1896.—The following appointments are made in the Elphinstone Middle School, Bombay, since the retirement of Mr. G. A. Raje:—Mr. K. S. Rege, to be 1st Assistant; Mr. J. B. Limaye, to be 2nd Assistant; Mr. A. M. Thakur, to be 3rd Assistant; Mr. B. B. Lele, to be 4th Assistant; Mr. A. K. Oke, to be 5th Assistant.

24th July 1896.—Mr. M. V. Dharandhar is appointed assistant teacher in the Sir J. J. School of Art, Bombay, *vice* Mr. Mantri, resigned.

27th July 1896.—Mr. C. V. Pandya is appointed 2nd Clerk to the Deputy Educational Inspector, Kaira Sub-Division; Mr. G. M. Jhote is appointed 2nd Clerk to the Deputy Educational Inspector, Broach Sub-Division.

28th July 1896.—The following appointments are made in the Nasik High School:—Mr. D. M. Bhate to be 6th Assistant; Mr. R. B. Chandarkar to be 7th Assistant; Mr. N. M. Gadre to be 8th Assistant; Mr. S. D. Behere to be 9th Assistant.

28th July 1896.—The following appointments are made in the Garud High School, Dhulia:—Mr. M. C. Shaligram to be 7th Assistant; Mr. R. B. Upsani, P.E., to be 11th Assistant.

The following appointments are made in the Nasik High School:—Mr. V. B. Bha to be 10th Assistant; Mr. S. A. Imamudin to be 11th Assistant; Mr. G. A. Souche to be 12th Assistant; Mr. N. B. Souche to be 13th Assistant.

MADRAS.

UNIVERSITY OF MADRAS.

ELECTION OF FELLOWS BY GRADUATES OF THE UNIVERSITY.

The following rules relating to the above and approved by the Syndicate are published for information.

1. Candidates for election as Fellows of the University of Madras shall be proposed and seconded by existing Fellows present at the Annual Meeting of the Senate, which during the current academical year will be held on Friday, the 28th of August next.

2. The names of candidates duly proposed and seconded (if eligible under paragraph 5, which is quoted below, of G.O., No. 155, Educational, dated 27th February 1893) shall be published in the *Fort St. George Gazette* in the month of September.

3. At the same time the qualifications of graduates entitled to vote shall be specified, and voters will be requested to apply to the Registrar for voting papers.

4. Each graduate entitled to vote shall give his vote for not more than two candidates. While a voter may vote for only one candidate, he shall not give more than one vote to the same candidate. Any voting paper containing the names of more than two candidates will be rejected.

5. A voter residing in Madras shall record his vote personally at the Senate House in the presence of the Registrar on a day and at an hour in November to be hereafter notified. A voter not residing in Madras and who is unable to attend at the Senate House in person shall fill in his voting paper in the presence of a Magistrate (not being a Village Magistrate), a Judge, a Subordinate Judge, or a District Munsif, who will authenticate it with his signature, and shall despatch it in a registered cover to the Registrar, so as to reach him not later than the day before that fixed for voting at the Senate House.

Extract from G.O., No. 155, Educational, dated 27th February 1893.

" 5. With regard to the qualifications of candidates for appointment as Fellows and of electors, the Government is disposed to think that the field from which candidates may be selected should be as wide as possible; His Excellency in Council will not, therefore, prescribe any qualifications for candidates except that, if they happen to be members of the Madras or any other Indian University, they must be Masters of Arts or Laws, of Doctors of Medicine, or else Bachelors of Arts, Laws, Medicine or Engineering of not less than twenty years' standing, and that all candidates must be proposed and seconded by existing Fellows of the University. On the other hand, the following classes of persons only will be permitted to vote :—

(i) Masters of Arts of the Madras University;
(ii) ,, of Laws ,,
(iii) Doctors of Medicine ,,
(iv) Bachelors of Arts ,,
(v) ,, of Laws ,,
(vi) ,, of Medicine and Masters in Surgery of the Madras University;
(vii) ,, of Civil Engineering of the Madras University;

provided also that no person belonging to the last four classes will be permitted to vote unless he took his degree at least twenty years before the date of the election."

(By order)

A. J. COOPER-OAKLEY,
Registrar.

SENATE HOUSE, *22nd July* 1896.

The Director of Public Instruction notifies the following appointments :—

Name.	Designation of present post.	Post to which appointed.	Remarks.
M. R. Ry. T. A. Ramachandra Aiyar.	Headmaster, Training School, Trichinopoly.	Acting Sub-Assistant Inspector of Schools, Saidapet Range.	To join forthwith till M.R.Ry. K. Streenivasalu Nayadu takes charge of the range.
M.R.Ry. T. A. Swaminatha Aiyar.	First Assistant, Government Mappilla Training School, Calicut, and Acting Headmaster, Government Training School, Salem.	Acting Sub-Assistant Inspector of Schools, Chidambaram Range.	During the employment of M.R.Ry. P. Krishnama Chari on other duty. To join forthwith.

LEAVE.

M.R.Ry. N. Ranghunatha Chariyar Avargal, Assistant Inspector of Schools, Presidency Division, furlough for one year from or after the 1st September 1896, under article 371 of the Civil Service Regulations.

Mr. A. Chatterton, Professor of Engineering, College of Engineering, furlough for fifteen months from or after the 29th August 1896, under article 340 (*b*) of the Civil Service Regulations.

PUBLIC SERVICE NOTIFICATION.

Ootacamund, August 4, 1896.

All undergraduates who have not already qualified for admission to the Public Service by passing the prescribed test in Handwriting shall, in future, be required to have passed both in Handwriting and Dictation as prescribed in the notification regulating the Upper Secondary Examination.

Note 2 to article 2 of the Public Service Notification will accordingly read as follows :—

All undergraduates shall be required to have passed in Handwriting and in Dictation as prescribed under First Language (English) in the Upper Secondary Examination Notification. Undergraduates who passed in Handwriting before 1896 will not be required to pass in Dictation.

J. F. PRICE,
Chief Secretary.

A revised edition of the Madras Educational Rules which has undergone several important modifications, especially in the provisions relating to the inter-school rules and which has recently received the sanction of Government, will be ready for sale at the Government Press in a few days.

2. During the past few years, the Director has had frequent occasion to notice that communications regarding inter-school rules and other matters have been addressed direct to this office. These had subsequently to be referred to the Inspecting officers, thereby causing long and unnecessary delays. To avoid such delays, managers and heads of schools and second-grade colleges are requested in future to address all their communications in the first instance to the Inspector or the Inspectress as the case may be.

3. Heads of first-grade colleges and other institutions, who now correspond direct with this office, will continue to do so.

Office of the Director of Public Instruction,
MADRAS, *7th August* 1896.

D. DUNCAN,
Director of Public Instruction.